

PARTISH

Development of part-time and short cycle studies In higher education in Bosnia and Herzegovina

4.3. Purchased and installed equipment

Project Acronym:	PARTISH
Project full title:	Development of part-time and short cycle studies in higher education in Bosnia and Herzegovina
Project No:	617421-EPP-1-2020-1-RS-EPPKA2-CBHE-SP
Funding Scheme:	ERASMUS+
Coordinator:	University of Novi Sad (UNS)
Project start date:	15 th January 2021
Project duration:	48 months

Abstract	This report contains information about the procedure of equipment purchase and details about purchased and installed equipment and softwares.
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DOCUMENT CONTROL SHEET

Title of Document:	4.3. Purchased and installed equipment
Work Package:	WP4
Last version date:	05/01/2023
Status :	Finished
Document Version:	V1
File Name	4.3. Purchased and installed equipment.pdf
Number of Pages	13
Dissemination Level	External

VERSIONING AND CONTRIBUTION HISTORY

Version	Date	Revision Description	Responsible Partner
V1	05/01/2023	Creation of document	UNS

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Table of contents

1. Equipment for the Partish project	4
2. Equipment at the University of Sarajevo	5
3. Equipment at the University of Mostar	6
4. Equipment at the University of East Sarajevo	7
5. Equipment at the University of Zenica	12
6. Equipment at the University of Tuzla	13

1. Equipment for the Partish project

Equipment was necessary because of two reasons. The first, significantly larger part of the equipment, was necessary for the development of specific PT and SCHE, and especially for pilot implementation and testing of specific PT and SCHE models, where 8 pilot PT and SCHE models was be developed and tested at different higher educational institutions in Bosnia and Herzegovina. This was mostly IT equipment necessary for the part of PT and SCHE program conducted in classrooms.

The second, smaller part of equipment, was necessary for realisation of different activities in the project, like survey on stakeholders, analysis of survey results, development of training material, development of toolkit for implementation and documentation of PT and SCHE practice-integrated higher education programmes, monitoring, dissemination activities, management, administrative work and reporting. This is smaller part of the equipment necessary for project team members, which is mostly computer equipment: laptops and printers.

Equipment purchase was planned in the first part of the project, until M18, before the time when all partners need to start with pilot implementation in order to be well prepared and able to properly fulfil all project requirements. All equipment is located at 5 partner higher educational institutions from BIH where pilot programs are conducted.

The budget for the purchase of equipment was:

- 53,500 EUR for UES (real cost 53,499.53 EUR);
- 54,650 EUR for UNMO (real cost 54,649.94 EUR);
- 55,845 EUR for UNSA (real cost 55.729.08 EUR);
- 53,500 EUR for UNTZ (real cost 53,499.53 EUR) and
- 53,500 EUR for UNZE (real cost 53,499.53 EUR).

Total spent/Total planned= EUR 270,877.61 / EUR 271,004.00=99.95%

The procedure for public procurement was joint open public tender procedure, led by the University of East Sarajevo. The procedure was started in February 2021 when representatives of the University East Sarajevo got VAT exemption. After that, according to Articles 25 and 53 of the Law on Public Procurement ("Official Gazette of BiH", No. 39/14), Article 3 of the Instructions for the Preparation of Model Tender Documents and Offers ("Official Gazette of BiH", No. 90/14), tender documentation was prepared and the whole procedure was done until June 2022. The public procedure was successful in 4 out of 5 partners. During summer 2022 partners University of East Sarajevo, University of Tuzla, University of Zenica, and University of Mostar purchased the equipment. University

of Sarajevo needed to make new tender procedure, only for them, since in the joint procedure they did not get any offer.

Equipment was delivered and installed at the University of Zenica on August 22 2022, the University of Mostar on August 29 2022, the University of East Sarajevo on August 15 2022, the University of Tuzla on September 05 2022 and the University of Sarajevo in January 2023.

2. Equipment at the University of Sarajevo

NEW SPECIFICATION				
Num.	Description	Number	Unit price (EURO)	Total price (EURO)
1	Blackmagic Design URSA Mini Pro 12K	2	6104	12209
2	Canon Cine Lens CN-E 18-80mm	2	4513	9027
3	Canon Zoom hand ariD ZSG-C10	2	563	1127
4	URSA Viewfinder	2	1610	3219
5	URSA VLock Battery Plate	2	109	218
6	URSA Mini Pro EF Mount	2	187	375
7	URSA Mini Shoulder Kit	2	432	864
8	EW 512P G4	2	852	1703
9	MKH 416-P48U3	2	725	1450
10	SanDisk 256GB Extreme PRO CFast 2.0 Memory Card	2	336	673
11	Xcellon CFast 2.0 USB 3.1 Gen 2 Tvoe-C Card Re	2	47	93
12	S-8082S V MOUNT BATTERY	2	209	419
13	S-3822S TWIN BATTERY CHARGER	2	170	340
14	S2068S-FTMS	2	2499	4998
15	UltraStudio 4K Mini Thunderbolt 3	1	1066	1066
16	Tilta Follow Focus With Hard StoDS-15mm	2	655	1310
17	Sound Devices MixPre-3 I	1	821	821
18	SWIT CL-120D 120W 2:1 Bi-Color SMD LED Panel	1	1074	1074

19	Računar Apple Mac Studio M1 Ultra 64C GPU/128GB/1TB SSD Monitor Apple Studio Display Apple Magic Keyboard w Touch ID and Numeric Keypad - Black Keys - International Apple Magic Mouse (2022)- Black Multi-Touch Surface	1	10141	10141
20	Final Cut Pro X, Editing Software	1	562	562
21	PROMISE Pegasus32 R6 24TB RAID System	1	4090	4090

3. Equipment at the University of Mostar

NEW SPECIFICATION				
No.	Equipment name and specification	Amount	Price	Total
1	Mini PC (SUM dislocated classroom)	21	256	5369
2	Desktop Computer - Type 1 (Classroom D226 FSRE)	21	665	13958
3	Display (21 - SUM DC, 21 - D226)	42	169	7087
4	Desktop Computer - Type 2	2	2045	4090
5	Laptop	4	969	3878
6	Projector (1 - SUM DC, 2 - FSRE)	3	363	1089
7	WiFi Router (Orašje)	6	87	522
8	Vision system for a collaborative robot	1	4705	4705
9	Screwdriving tool for a collaborative robot	1	5931	5931
10	Vacuum gripper for a collaborative robot	1	4290	4290
11	Mobile platform for collaborative robot	1	3732	3732
			Total	54650

4. Equipment at the University of East Sarajevo

NEW SPECIFICATION				
No.	Equipment name and specification	Amount	Price (EUR)	Total (EUR)
1	Switch Cisco Business 250-48T-4G	2	870	1740.00
2	Computer, monitor, mouse and keyboard, Operating system: Installed hardware system directly from the manufacturer - Windows 10 Pro 64 CPU: Number of cores min 2, threads 4. 4MB cache, operating clock minimum 4.00. minimum benchamerk value equal to or better than 4100 RAM: minimum 8GB DDR4 2666MHz UDIMM, 2 free slots, expandable up to 128GB Motherboard: The appropriate processor offered, Expansion slots: minimum 1k PCI Express 16k, 1k PCI Express k1, Device drawers: 1x3.5 "internal, 1x2.5" internal 2k M.2 internal card slot (1 for SDD and 1 for WiFi card), Hard drive: 256 GB SSD Connections (minimum, adapters not allowed): 9xUSB ports (of which min. Forward 4x USB 3.2 and 1x USB 3.2 Type C (min. 15W charging)), 2 x serial, 1 RJ-45, 1x HDMI, 2x DP, 3.5mm headphone jack and microphone Graphics Card: Integrated, Keyboard: USB localized, must be from the same manufacturer as the computer, black, Mouse: USB, optical, with wheel, must be from the same manufacturer as the computer, black Sound system: HD Audio, mandatory internal speaker Housing: Tower, maximum 180W PSU power supply, minimum 85%, black Kensington security cable slot, mechanical padlock preparation Removable media access / boot control (CD, FDD access / boot control), Individual control of all USB ports via BIOS, Electronic switch to signal the opening of the housing and record it in the BIOS, Possibility to prohibit writing data to media via USB port - "Smart USB Disable" The monitor must be from the same manufacturer as the computer with the following minimum	21	690	14490.00

	characteristics: 21.5 ", 1920x1080 resolution, VA panel, 16: 9 ratio, 102 DPI, anti-glare, viewing angle 178 ° / 178 °, 250 nits, HDMI and VGA port, Energy star 8.0, response time 4ms (extreme mode) and 6ms (normal mode) Warranty period: Minimum 3 years, submit a statement from the bidder that the equipment will be delivered new and not used with the mandatory service within the given warranty period			
3	Video projector Max. resolution: 800x600 Max.supported resolution: 1920x1200 Brightness: 4500 ansi Contrast: 20000:1 Lamp power W: 200 Lamp life Normal -h: 6.000 Durability of the Eco-h lamp: 10.000 Image size, diagonal: 23"~300" Projection ratio: 1.94~ 2.16 Picture format: 16:9, 4:3 Connectors: Audio in, D-sub x1, HDMIx1, USBx1	7	390	2730.00
4	SmartRack Premium 42U Server Rack Enclosure, Secure, Standard-Depth Link: https://www.tripplite.com/42u-smartrack-standard-depth-server-rack-enclosure-cabinet-doors-side-panels~SR42UB Color: Black Factory Preset Rack Depth (cm): 70.5 Factory Preset Rack Depth (mm): 705 Maximum Device Depth (cm): 93.98 Maximum Device Depth (mm): 940 Minimum Device Depth (cm): 10.16 Minimum Device Depth (mm): 102 Rack Height: 42U Shipping Dimensions (hwd / cm): 215.90 x 115.57 x 66.04 Shipping Weight (kg): 152.41 Unit Dimensions (hwd / cm): 199.39 x 60.02 x 109.22 Unit Weight (kg): 127.46 Weight Capacity - Rolling (kg): 1,021 Weight Capacity - Stationary (kg): 1,361	2	560	1120.00



	Rack Depth: Standard Number of Vertical Mounting Rails: 4			
5	Dell Digital KVM Switch DMPU108e https://www.dell.com/en-us/work/shop/dell-digital-kvm-switch-dmpu108e-taa-compliant/apd/a7546773/networking	1	1300	1300.00
6	Synology DiskStation DS1621xs+	1	1600	1600.00
7	WD RED NAS 6TB https://shop.westerndigital.com/products/internal-drives/wd-red-sata-hdd#WD60EFAX	7	145	1015.00
8	QNAP TS-h973AX - 32GB https://www.qnap.com/en-us/product/ts-h973ax	1	1000	1000.00
9	Access Point WiFi 6 Long-Range Link: https://store.ui.com/products/unifi-6-long-range-access-point 1.3 GHz dual-core processor (now upgraded to support full-duplex 1 Gbps TCP/IP performance) Four-stream high-efficiency Wi-Fi 6 technology 5 GHz band 4x4 MU-MIMO and OFDMA with radio rate of 2.4 Gbps 2.4 GHz band 4x4 MIMO with radio rate of 600 Mbps Powered with 802.3at PoE (PoE injector not included)	10	120	1200.00

10	Cloud Key Gen2 Plus Link: https://store.ui.com/collections/unifi-protect-nvr/products/unifi-cloudkey-plus Compatible with the free UniFi Network and Protect applications Simple, Bluetooth-powered console setup via the Network and Protect mobile apps Powered by 802.3af PoE or QC 2.0 USB-C Built-in battery for automatic safe shutdown Pre-installed 2.5", 1 TB hard drive that can be upgraded to 5 TB Front panel display that helps you to review UniFi system details at a glance Allows you to easily scale your deployment by connecting additional UniFi devices	4	200	800.00
11	PDU41104 Switched PDU Series Automated notifications: Email, SMS Text, and SNMP Trap Phase: Single Amps: 20A (Derated to 16A) Volts: 200 – 240 V Frequency: 50Hz/60Hz Plug type: NEMA L6-20P Outlets: 21 x IEC-320 C13 + 3 IEC-320 C19 Size: 0U Rackmount	2	750	1500.00
12	Laptop Screen: 14.0" / 1920 x 1080px / Anti-glare / IPS Proccesor: Intel Core i5-1135G7 (2400 - 4200MHz) / 4/8 (physical/logical) / 8192KB Memory: 8GB DDR4 (3200Mhz) Hard disk: 512GB SSD Graphics card: Intel Iris Xe Graphics G7 80EUs (400 - 1300 MHz) Operating system: Windows 10 Home Port: HDMI, USB 3.2 x1, USB Thunderbolt 3 x2 LAN / Bluetooth / WiFi Yes / Yes / Yes Optics / Audio / Camera Yes / Stereo official / Yes Weight / Color 1.17kg / Grey Warranty: 24 months Other: Keyboard backlit	2	1070	2140.00

13	Back-UPS APC BACK-UPS 950VA, 230V, AVR, Schuko Sockets - BX950U-GR	3	170	510.00
14	Desktop computer with monitors (No OS, Intel, RAM 8Gb, SSD 256 min, display 21"/22")	30	431	12930.00
15	Video projector (DLP, Rez.min 1024 x 768, VGA, HDMI, USB, Lampa 4000/6000h)	4	395	1580.00
16	Laptops (No OS, Intel i3/i5, RAM 8Gb min, SSD 256Gb min, display 13"- 14")	1	766.94	766.94
17	LoRa Radio Node V2.0 SX1278 Ra-02 ATmega328P 433MHz 2.4G Wireless Module (with SX1278 Ra-02 chip)	40	15.85	634.00
18	ESP-32 ESP32S Development Board WiFi+Bluetooth 2.4GHz Antenna CP2102 Module	40	4.60	184.07
19	SIM800L 4-Band GSM GPRS Modul superklein für Arduino Projekte	40	2.05	81.81
20	Multifunctional Expansion Board Shield kit Based Learning For Arduino UNO R3	40	2.30	92.03
21	CP2102 USB 2.0 to TTL UART Module 6Pin Serial Converter STC Replace FT232 Module	40	1.28	51.13
22	120pcs Dupont Wire Male to Male + Male to Female + Female to Female Jumper Cable	40	2.56	102.26
23	140pcs Solderless Breadboard Jumper Cable Wire Kit Box DIY Shield For Arduino	40	2.30	92.03
24	1PCS Plastic Electronic Project Box Enclosure Instrument Case 100x60x25mm	40	1.28	51.13
25	10pcs STP75NF75 P75NF75 ST Mosfet TO-220 NEW	40	2.56	102.26
26	37 Sensor + UNO R3 PLUS Atmega328P + Nano Micro I/O Shield V3.0 Starter Kit	40	25.56	1022.58
27	12V 8Channel Relay Module with Optocoupler for Arduino UNO 2560 1280 ARM PIC AVR	40	5.11	204.52
28	5V Four 4 Channel Relay Module With optocoupler For PIC AVR DSP ARM Arduino 8051	40	2.56	102.26
29	5V 4 Channel OMRON SSR G3MB-202P Solid State Relay Module with Resistive Fuse	40	5.11	204.52
30	ATmega328P+ESP8266 with board	40	9.20	368.13
31	LCD 16x2 I2C	40	2.56	102.26
32	SET SENZORA 45 u 1	40	15.34	613.55
33	Education Embedded Board (ESP32, LoRa, ATmega328P) BC-100	5	255.65	1278.23

34	CNC 300W 3 Axis Machine	1	1022.58	1022.58
35	3D Printer Print Volume 300*300*340mm	1	768.72	768.72
	TOTAL (EUR)		53500.00	

5. Equipment at the University of Zenica

NEW SPECIFICATION				
No.	Equipment name and specification	Amount	Price	Total
1	Server Equivalent to Server HP DL360 Gen9 E5-2630v3 (Xeon 8 core, 16GB)	1	5000	5000
2	Rack hard Drive Equivalent to HPE 1TB SATA 6G Midline 7.2K SFF	1	1000	1000
3	Server Rack Equivalent to HPE 14U Advanced Shock Rack	1	1000	1000
4	Rackmount Keyboard and Monitor Equivalent to HP TFT7600	1	500	500
5	All-in-One workstation with OS Equivalent to HP 24-dp0121ny TOUCH 8GB 256GB SSD	30	850	25500
6	Switch Equivalent to Cisco SG250-26P-K9, 26-Port 10/100/1000 Smart PoE x 1 pc	1	1000	1000
7	USB Equivalent to PowerWalker 3000VA/2700W	1	1000	1000
8	Portable Interactive Whiteboard	4	500	2000
9	Laptop Equivalent to HP ZBook Firefly 14 G8	5	1500	7500
10	SLA 3D printer Formlabs 3B set (including Formlabs 3B printer, Resin Tank, Build Plate, Finish Kit, Form Wash, Form Cure, Model Resin)	1	9000	9000
			TOTAL (EUR)	53500

6. Equipment at the University of Tuzla

NEW SPECIFICATION				
No.	Equipment name and specification	Amount	Price	Total
1	Lenovo ThinkSystem SR630 Xeon Silver 4208 (8C or 10C, 2.1GHz 11MB Cache/85W); 32GB 2933MHz (1x32GB,2Rx4 RDIMM), O/B, 930-8i,2x750W, XCC Enterprise,Tooless Rails; 3 yr warranty	1	2564	2564
2	Enterprise Hard Drive - Hot-Swap(HDD); Capacity 1.2 TB; SAS 12Gb/s; 10,000 rpm; 2.5" SFF.	5	345	1725
3	Read intensive - Solid State Drive - Hot Swap (SSD); Capacity 480 GB; SATA 6Gb/s with Smart Carrier; 2.5" SFF.	5	257	1285
4	Server Rack 14U Advanced Shock Rack	1	855	855
5	Rackmount Keyboard and Monitor HP TFT7600	1	435	435
6	All-in-One workstation with OS HP 24-e005ny 8GB 256GB SSD	30	725	21750
7	Switch Cisco SG250-26P-K9, 26-Port 10/100/1000 Smart PoE	1	854	854
8	USB PowerWalker 3000VA/2700W	1	854	854
10	Laptop Equivalent to HP EliteBook 840 G4	14	1282	17948
11	Smart Interactive Table	1	2500	2500
12	UTP cables and network equipment (patch panel, UTP connector and protector)	1	300	300
13	Wireless microfon	30	50	1500
14	Web camera	30	31	930
			TOTAL (EUR)	53500