Accelerating Western Balkans University Modernization by Incorporating Virtual Technologies

VTech@WBUni

WP2.2 - Activity 2.2.3 and 2.2.4 Report

Equipment purchase:

Preparing equipment list and infrastructure, software, and hardware

Tendering procedure/Purchase

Introduction

Within Work Package 2.2 of the Erasmus+ VTECH project, Activity 2.2.3 is related to the purchase of hardware and software equipment. Partner institutions such as UAMD, UET, EPOKA, Polis, UBT, and UP purchased the equipment according to their needs. The procedure of tendering was done by the Department of Procurement at AMU, based on a detailed technical specification report. The procedure was done according to the Albanian national regulation for public procurement.

This document contains a report on equipment purchases held at each partner institution.

1. Equipment purchases

2.1 Aleksander Moisiu Durres (UAMD)

According to WP 2.2.3, UAMD has prepared the necessary list of equipment and software to be purchased. Such hardware/software is and will be used to create a modern space dedicated to VR/AR development at the main campus of AMU. This lab is equipped with all necessary devices like a workstation and different VR/AR headsets that were purchased. In order to establish a Virtual Technology HUB to assist lecturers in developing VR/AR-based learning methodologies, the following equipment was planned to be purchased in the context of the VTech@WBUni project.

No.	Equipment
1	Workstation desktop
2	Oculus Rift - Virtual Reality (VR) Headset (2 kits)
3	Samsung Gear VR with controller + Samsung s9 (2 kits)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablets (5 tablets)
8	Microsoft Hololens

9	Vuforia Cloud Licence 3 years
10	3D Printer + Filaments
11	VR headset (10 pieces)

However, due to the technological development and progress in the last year, especially in the field of virtual reality and in accordance with the suggestions and recommendations of EU Partners in the consortium minor changes/updates have been made to the equipment list. Some of the new equipment is only the last version of the previous ones and some additional sets were added as follows:

- Oculus Rift was replaced with its newer version Oculus Rift S
- Samsung Gear VR was replaced with Oculus Quest and HTC VIVE Cosmos
- Microsoft HoloLens was replaced with the Magic Leap One
- 10 sets of VR headsets for students are replaced with an increased number of kits for VR development

The final equipment list is shown below:

No.	Equipment
1	Workstation Desktop
2	Oculus Rift S (3 sets)
3	Oculus Quest (4 sets)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablet (6 tablets)
8	Magic Leap One (1 set)
9	HTC Vive Cosmos (2 sets)
10	3D Printer + Filaments
11	Vuforia Cloud Licence 3 years

2.2 European University of Tirana

In order to establish a Virtual Technology HUB, to assist lecturers in developing VR/AR-based learning methodologies and courses, the following equipment was approved to be purchased in the context of the VTech@WBUni project.

No.	Equipment
1	Workstation desktop
2	Oculus Rift - Virtual Reality (VR) Headset (2 kits)
3	Samsung Gear VR with controller + Samsung s9 (2 kits)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablets (5 tablets)
8	Microsoft Hololens
9	Vuforia Cloud Licence 3 years
10	3D Printer + Filaments
11	VR headset (10 pieces)

However, after market research, and a careful analysis of VTech project scope needs and the university needs, our project partner, the European University of Tirana, has decided to do a small change in the equipment list. The change is the reduction in the number of "Augmented Reality Learning device" items from 6 as planned to 1 and to remove item 10 which is "Vuforia license (3 years)".

No.	Equipment
1	Workstation Desktop
2	Oculus Rift S (3 sets)
3	Oculus Quest (4 sets)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablet (1 tablet)

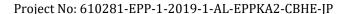| 8 | Magic Leap One (1 set) |
| 9 | HTC Vive Cosmos (2 sets) |

2.3 Polis University

Polis University has purchased the following equipment for the new laboratory that has been created to assist the VR/AR-based courses in this project. This lab is equipped with all necessary devices like a workstation and different VR/AR headsets that were purchased. In order to establish a Virtual Technology HUB to assist lecturers in developing VR/AR-based learning methodologies, the following equipment was planned to be purchased in the context of the VTech@WBUni project.

No.	Equipment
1	Workstation desktop
2	Oculus Rift - Virtual Reality (VR) Headset (2 kits)
3	Samsung Gear VR with controller + Samsung s9 (2 kits)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablets (5 tablets)
8	Microsoft Hololens
9	Vuforia Cloud Licence 3 years
10	3D Printer + Filaments
11	VR headset (10 pieces)

However, due to the technological development and progress in the last year, especially in the field of virtual reality and in accordance with the suggestions and recommendations of EU Partners in the consortium minor changes/updates have been made to the equipment list. Some of the new equipment is only the last version of the previous ones and some additional sets were added as follows:

- Oculus Rift was replaced with its newer version Oculus Rift S
- Samsung Gear VR was replaced with Oculus Quest and HTC VIVE Cosmos
- Microsoft HoloLens was replaced with the Magic Leap One
- 10 sets of VR headsets for students are replaced with an increased number of kits for VR development

The final equipment list is shown below:

No.	Equipment
1	Desktop computers (8 units)
2	Laptop (3 units)
3	Oculus Quest (2 sets)
4	Augmented Reality Learning Tablet (4 tablets)
5	Magic Leap One (2 sets)
6	HTC Vive Cosmos (2 sets)
7	Vuforia Cloud Licence 3 years

2.4 EPOKA University

Epoka University has purchased the following equipment for the new laboratory that has been created to assist the VR/AR-based courses in this project. This lab is equipped with all necessary devices like a workstation and different VR/AR headsets that were purchased. In order to establish a Virtual Technology HUB to assist lecturers in developing VR/AR-based learning methodologies, the following equipment was planned to be purchased in the context of the VTech@WBUni project.

No.	Equipment
1	Workstation desktop
2	Oculus Rift - Virtual Reality (VR) Headset (2 kits)
3	Samsung Gear VR with controller + Samsung s9 (2 kits)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablets (5 tablets)
8	Microsoft Hololens
9	Vuforia Cloud Licence 3 years
10	3D Printer + Filaments

| 11 | VR headset (10 pieces) |

However, due to the technological development and progress in the last year, especially in the field of virtual reality and in accordance with the suggestions and recommendations of EU Partners in the consortium minor changes/updates have been made to the equipment list. Some of the new equipment is only the last version of the previous ones and some additional sets were added as follows:

- Oculus Rift was replaced with its newer version Oculus Rift S
- Samsung Gear VR was replaced with Oculus Quest and HTC VIVE Cosmos
- Microsoft HoloLens was replaced with the Magic Leap One
- 10 sets of VR headsets for students are replaced with an increased number of kits for VR development

The final equipment list is shown below:

No.	Equipment
1	Workstation Desktop
2	Oculus Rift S (3 sets)
3	Oculus Quest (4 sets)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablet (6 tablets)
8	Magic Leap One (1 set)
9	HTC Vive Cosmos (2 sets)
10	3D Printer + Filaments
11	Vuforia Cloud Licence 3 years

2.3 University of Prishtina

At the University of Prishtina, have been purchased the following equipment for the new laboratory, which was created to assist the VR/AR-related courses in this project. In order to establish a Virtual Technology HUB to assist lecturers in developing VR/AR-based learning

methodologies, the following equipment were planned to be purchased in the context of VTech@WBUni project. The equipment has proven satisfactory and adequate and is listed in the below table:

No.	Equipment
1	Workstation Desktop
2	Oculus Rift S (3 sets)
3	Oculus Quest (4 sets)
4	HTC Vive Pro full kit (2 kits)
5	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
6	Emotiv EPOC PRO License 3 years
7	Augmented Reality Learning Tablet (6 tablets)
8	Magic Leap One (1 set)
9	HTC Vive Cosmos (2 sets)
10	3D Printer + Filaments
11	Vuforia Cloud Licence 3 years

2.4 University for Business and Technology (UBT)

UBT is one of the largest private HEIs in the Western Balkans providing the biggest number of accredited study programs covering major programs in engineering sciences and VTECH proposed equipment will find use across multi-disciplinary uses. As we have done an internal review of courses among over 25 Faculties to apply VR/AR courses related teaching, we have identified over 100 courses for areas such as Computer Science, Mechatronics, Information Systems, Media, etc. Also, worth mentioning that there is specific programs at the several faculties that will have a significant positive effect placing VTECH equipment for the teachers and students where at least 200 teachers will be able to utilize them and more than 2000 students UBT-wide on yearly basis. To enable wider audience use we have analyzed the initial VTECH equipment and our technical teams propose changes to reach the maximum use of equipment as stated above. The goal is to prepare the students for the job market with new trends of applicable standards that are applied today in the EU and the world. UBT is a leading pioneer in Virtual Technologies and has established a partnership with world-class leader EON where UBT is almost the largest education institution user in the EU to use the EON platform incorporated into the teaching system (https://eonreality.com/ubt-kosovo-avr-platform/).

Also, with EU projects we have accomplished purchasing several laboratories and we are able to use them across different disciplines. Labs established: MDTV, SDI UBT, Mechatronics, etc. therefore this is a special opportunity to establish a VTECH laboratory with proposed equipment that will further broaden our scope to fully cover current subjects taught with needed infrastructure to conduct classes thus increase the quality output that will assist students to apply practical skills with the state-of-the-art equipment. The proposed equipment list below will provide a basic operation at bachelor and master study levels and shall meet the current syllabuses and future programs as the proposed equipment will have enough capacity for a few years to meet the foreseen programs under VTECH goals. The equipment purchase was planned following the EU partner's recommendations and UBT has completed the list based on

- The proposed equipment fulfills very well the functions that UBT has in the field of multimedia, VR, AR, and components for 3D production and Video 360° for XR technology.
- User increase and application may go up to 200 teachers per year
- Student user – may reach up to 2000 per year
- Increases interoperability across multidiscipline / faculties and joint research projects among students should have positive effects
- Industry needs to be met with trained students, especially in the gaming industry where Kosovo has many young that don't have the ability to utilize AR/VR technologies

The proposal includes Equipment and installation of tailor-made solutions that will meet the current needs to meet VTECH and future requirements of newly developed programs in the future. In reference to public procurement procedure, UBT applies and is fully in compliance with local law procedures and in addition when projects are funded by the EU/Erasmus+. When the tender is announced it will only provide performance indicators as guided by Erasmus+ procurement instructions. UBT will re-direct another approval prior to purchasing to ensure full transparency and best practices are followed.

In the table below are listed proposed equipment to be purchased listed next pages:

No	Equipment
1	DaVinci ResolvePrimary Correction Creative Control (1 kit)
2	Workstation Station , Titan A499 Memory 64 GB (4x 16GB) 288-Pin DDR4 3200 Desktop Memory (1 kit)
3	Logickeyboard Black magic Davinci Resolve v.12 Astra Blacklit USB Keyboard for WIN (2 kits)
4	KRK RoKit RP7 G4 Studio Monitor Active 145W Black (2 kits)

5	BRCX400B_RMPACK - 3x Black BRC-X400 and free 1xRM-IP10 pack. QYT break applicable. AC adapter included (1 kit)
6	DeckLink 4K Extreme 12G (1 kit)
7	Audio Procesor Falcon 3i (1 kit)
8	Axel Oxygen 3000D DANTE Digital Broadcast Mixer (1 kit)
9	Axel Oxygen 3000D Talk Box (1 kit)
10	Shure Studio Sound Microphone SM7B (Black) (1 kit)
11	Audio link (1 kit)
12	VR headset (4 kits)
13	Emotiv EPOC Flex Gel Sensor Kit (2 kits)
14	Oculus Rift - Virtual Reality (VR) Headset (2 kits)
15	Emotiv EPOC PRO License 3 years
16	Microsoft Hololens (1 kit)