



Erasmus+

Educational for Drone (eDrone)

(Project Number 574090-EPP-1-2016-1-IT-EPPKA2-CBHE-JP)

WP3, D3.7

CTT Deployment

Deliverable Type	Report
Result	Report
Date of Delivery	
Author(s)	University of Evry – University Paris Saclay
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Please include here also information on: when was the concept note submitted, when was feedback received, etc.



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Lead responsible partner: University of Evry
Responsible person: Said MAMMAR
Other cooperating partners: UNISAN, B4ENG, UNIEVY, MUT, ASUVS, CAA, ACAPOL, SAUM, APA , ASUE, NPUA, BTSU, ISU, TSU, BSU, UNISAN, UNIGAL
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Elaborated by: **Said MAMMAR, The Hung PHAM**

Name, affiliation (PARTNER): University of Evry - University Paris Saclay.

Introduction / Foreword

The deployment is spanned in 4 months. The workload of the attendees is assigned in accordance to attendees profiles.

The course is organized in order to comprise frontal lessons, e-learning lessons, home assignments, visits, team projects, intermediate evaluations and final exams. Frontal lessons, intermediate and final exams will take place.

The attendees of CTT have also enjoyed internships at sites of the EU partners as part of their practical education in the application of specialized equipment.

This experience permits them to have a first-hand experience on design and implementation of systems for drones. In details:

- UNISAN, B4ENG, UNIEVY, MUT, ASUVS, CAA, ACAPOL, SAUM, APA, ASUE, NPUA, BTSU, ISU, TSU, BSU : will contribute to the deployment activities and frontal lessons for CTT (D 3.7).
- UNISAN: host of 6 Georgian teachers during the internship activities of CTT specifically devoted to the acquisition of practical competences and skills and of a drone pilot license.
- MUT, UNIGAL: host of 6 Armenian teachers during the internship activities of CTT specifically devoted to the acquirement of a drone pilot license

1. Type of lessons delivered and material used (frontal, e-learning, home assignment, labs)

The delivered lectures covered the following topics:

- C1. Drone architecture
- C2. Drone avionics
- C3. Drones equipment for measurement and monitoring
- C4. Drone piloting
- C5. Processing of measurement data
- C6. Laws and regulations
- C7. Drone Maintenance
- C8. Civil applications

All the lessons delivered are on the ICT platform <http://www.edroneproject.org/moodle/>. On the ICT platform were uploaded the video records of the lessons. All CTT attendees had access to the courses content during the CTT deployment.

The courses are affected and split among EU members as provided in the following tables. Number of attendees from partner countries are given in the last four columns.



	UNIEVRY	MUT	UNIGAL	B4ENG	UNISANN	ASUVS	Armenia	Georgia	Belarus	MD
W1	C1, 2px5d 04.06.2018- 10.06.2018						1p	1p	1p	5p
W2		C2, 2px5d 11.06.2018- 17.06.2018					1p	1p	1p	5p
W3			C3, C8, 2px5d 18.06.2018- 24.06.2018				1p	1p	1p	5p
W4				C4, 2px5d 25.06.2018- 01.07.2018			1p	1p	1p	5p
W5					C5, 2px5d 02.07.2018- 08.07.2018		1p	1p	1p	5p
W6						C6, C7, 2px5d 09.07.2018- 15.07.2018	1p	1p	1p	5p

UNISAN

The lessons delivered were both theoretical and practical ones. The slides and the video of the lessons are available on the ICT platform <http://www.edroneproject.org/moodle/>. Practical activities were developed in the Moldavian eDrone laboratory where students learn how to acquire measurement data from drones and process them. During the practical experience, the students learned how to use the images acquired by the drone camera for performing the 3D reconstruction of buildings.

UNIEVRY

The courses delivered by UNIEVRY concern:

- Terminology
- Aerodynamics
- Air Frame and power plant selection
- Launching and Landing
- Meteorology

2. Type of evaluations

UNISAN

The evaluation of the students was performed during the laboratorial activities of the course by monitoring their hard and soft skills in the specific field of "processing of measurement data" and at



the end of the course by oral examination. In particular, their ability in the selection of the suitable sensors to acquire the data of interest, detect the cause of noise on signals and how to attenuate their effects, how to process the acquired data and how to present them were evaluated. At the end of the course, all the attendees have reached a good level of theoretical and practical competencies in the field of processing of measurement data.





UNIEVRY

The evaluation of the students was performed during laboratory activities. Experimental activities include drones installation, calibration, flight test in the flying zone, and path planning on UgCS software. The assessment is also done through the trainees' final reports.





UNIGAL





3. List of internships at sites (period, attendees, country, program...)

The internships took place in four European countries, namely

- France
- Italy
- Poland
- Romania

The information about the internship deployment were uploaded on the Google Drive <https://drive.google.com/drive/folders/12n07DxyIKavC3TJG513KqXuPImoOUxKr>

The internship programs are provided in the annex.

List of attendees at internship in France

2018 UNIEVRY INTERNSHIP
Evry, September 22 - October 06
LIST OF Moldovan attendees

	Name	Affiliation	e-mail	Host partner	Period
1.	Nedeoglo Natalia	MSU	nat_nedeoglo@yahoo.com	Univ Evry	September, 22nd - October, 6th
2.	Sprincean Veaceslav	MSU	sprincean@gmail.com	Univ Evry	September, 22nd - October, 6th
3.	Cebotaru Eugenia	AAP	cebotaru@list.ru , cebotaru.eu@gmail.com	Univ Evry	September, 22nd - October, 6th
4.	Corcimari Ion	ACAPOL	corcimari-ion@mail.ru	Univ Evry	September, 22nd - October, 6th
5.	Seinic Valeriu	SAUM	seinicv@gmail.com	Univ Evry	September, 22nd - October, 6th
6.	Vozian Constantin	CAA	vozian@caa.gov.md	Univ Evry	September, 22nd - October, 6th
7.	Danici Anton	CAA	adanici@gmail.com	Univ Evry	September, 22nd - October, 6th



List of attendees at internship in Romania

2018 UNIGAL INTERNSHIP
Galați & Brăila, September 29 - October 12

LIST OF BELARUS ATTENDEES

	Name	Affiliation	e-mail	Host partner	Period
1.	Alexander Spiridonau	BSU	sansan@tut.by	UNIGAL	September 29 - October 06
2.	Dmitry Ushakov	BSU	UshakovDV@bsu.by	UNIGAL	September 29 - October 06
3.	Sergey Leshkevich	BSU	LeshkevichS@bsu.by	UNIGAL	September 29 - October 06
4.	Svetlana Ermakovich	BSU	Ermakovich@bsu.by	UNIGAL	September 29 - October 12
5.	Elina Tcherniavskaia	BSU	tcherniavskaiaelina@gmail.com	UNIGAL	September 29 - October 12
6.	Vera Ermakovich	BSU	Ermakovich@bsu.by	UNIGAL	September 29 - October 12

List of attendees at internship in Poland

2018 MUT INTERNSHIP
Warsaw, September 28- October 11
LIST OF GEORGIAN ATTENDEES

	Name	Affiliation	e-mail	Host partner	Period
1.	Avtandili Mgebrishvili	Ilia State University		MUT	September 28- October 11
2.	Goga Saatashvili	Ilia State University		MUT	September 28- October 11
3.	Nana Dikhaminjia	Ilia State University		MUT	September 28- October 11
4.	Shota Barbakadze	Iv. Javakhishvili Tbilisi State University		MUT	September 28- October 11
5.	Mikhail Makhviladze	Iv. Javakhishvili Tbilisi State University		MUT	September 28- October 11
6.	Andro Gelashvili	Iv. Javakhishvili Tbilisi State University		MUT	September 28- October 11



List of attendees at internship in Italy

2018 UNISSANIO INTERNSHIP
Benevento, (September 30-October12)
LIST OF ARMENIAN ATTENDEES

	Name	Affiliation	e-mail	Host partner	Period
1.	Lilit Dadayan	ASUE	dadayanlilit@gmail.com	UNISSANIO	September 30-October12
2.	Argam Artashyan	ASUE	aartashyan@gmail.com	UNISSANIO	September 30-October12
3.	Vadim Grigoryan	ASUE	vadimgrigoryan@yahoo.com	UNISSANIO	September 30-October12
4.	Hrachya Karapetyan	NPUA	aharoyal@insurer.am	UNISSANIO	September 30-October12
5.	Grigor Babayan	NPUA	grigor.babayan@seua.am	UNISSANIO	September 30-October12
6.	Zhanna Yesayan	NPUA	zhanna-yesayan@mail.ru	UNISSANIO	September 30-October12

Conclusion

This deliverable demonstrated that staff from partner countries could be accommodated according to a commonly established schedule. The stays and their educational and professional content have been adapted to the specific needs of the participants. The elements provided throughout the document and in the appendices demonstrate the good performance of these training courses.



Annex 1 : Internships Programs

Internship, France, 24/09/2018 – 5/10/2018

Address of the event
Laboratoire IBISC, Université d'Evry-Val d'Essonne,
34 Rue du Pelvoux, 91080 Évry-Courcouronnes, France

Day No	Date	Activity	Presenter
1	24/9/2018	Familiarization with the university's lab	Prof. Yasmina BESTAOU Mr. The Hung PHAM
2	25/9/2018	Getting deeper into UAV piloting	
3	26/9/2018	Building a UAV from scratch	
4	27/9/2018		
5	28/9/2018		
6	1/10/2018	Meeting with the faculty staff	Prof. Saïd MAMMAR
	1/10/2018	UAV Labs	Prof. Claire VASILJEVIC
7	2/10/2018	Setup and getting the UAV to a fully functional state As an addition to the above we have been instructed to perform a flight simulation (SITL)	Prof. Yasmina BESTAOU Mr. The Hung PHAM
8	3/10/2018		
9	4/10/2018	Mission test using a GCS software pack, in our case UGCS.	
10	5/10/2018		

Internship, Braila, 1-12 October, 2018

Addresses of the event:

University "Dunarea de Jos" of Galati
Engineering and Agronomy Faculty of Braila - FIAB, 29, Calarasi street

The first group

Delegations Arrival and Accommodation Braila – Sunday - 30/09/2018

AGENDA			
DAY	TIME	TOPIC	PRESENTER
Monday, October 1st	9.00 – 9.30	Delegates registration	
	9.30 – 10.00	Welcome addresses	Vice Rector of University Dean of Faculty
	10.00 – 11.00	Presentation of faculty laboratories related to drone topic	F. Nedelcuț N. Hauk
	11.00 – 12.00	Travel to the University of Galati	
	12.00 – 16.00	Visit of universities laboratories. Presentation of sensors used on drones.	K. Uzuneanu S. Epure R. Solea
Tuesday 2 October	16.00 – 17.00	Travel to Braila	
	9.00 – 12.00	Theoretical presentation - sensors	S. Epure R. Solea
	13.00 – 17.00	- equipment - related software - applications	F. Nedelcut N. Hauk
Wednesday 3 October	9.00 – 13.00	Simulated flight on computers	S. Epure V. Bardahan
	14.00 – 17.00	Flight preparation Real flight in open field data collection	S. Epure V. Bardahan F. Nedelcuț N. Hauk





Warsaw 2018

Day No	Activity
1.	Laboratory on UAV avionics and air armament
2.	Laboratory on automatics and robotics for UAV application
3.	Official meeting with the MUT authorities Simulation technologies and virtual reality in UAV application
4.	Laboratory on logistics for UAV systems Sport activities for military UAV systems' crew
5.	Laboratory on innovative nanomaterials for UAV airframe designing
6.	Laboratory on optoelectronics devices for UAV payload Laboratory on electronic warfare in anti-drone systems
7.	Laboratory on acoustic sensors for anti-drone countermeasures – anechoic chamber Laboratory on Unmanned Ground Vehicles Laboratory on incremental technology in 3D printing center
8.	Official meeting with the authorities of the Faculty of Mechatronics and Aerospace Laboratory on manned and unmanned aircraft structure analysis in the airshed
9.	Laboratory on small arms and high energetic anti-drone systems Laboratory on UAV propulsion systems
10.	Laboratory of small Unmanned Aerial Vehicles Laboratory on testing and prototyping UAV air-frame – wind tunnel tests

UNISAN Educational Program (30th September - 12th October 2018)

1 October 2018 Monday

- 9.30 Presentation of the University 's places. Location: Palazzo Bosco main entrance.
- 14.30 lesson of prof. ROSSI and presentation, with the use of power point of the ASUE participants' activities. Location: SEA

2 October 2018 Tuesday

- 9.30 lesson of prof. ROSSI. Location: SEA
- 14.30 lesson of prof. ROSSI. Location: SEA
- 17.30 Return to the hotel and Arrival (NPUA participants)

3 October 2018 Wednesday

- 9.30 Presentation, with the use of power point of the participants' activities (both ASUE and NPUA): Location: SEA
- 11.00 Presentation, with the use of power point of the UNISAN activities.
- 12.00 Visit to UNISAN's laboratory. Location San Vittorino
- 14.30 Project assignment. Location: San Vittorino
- 15.00 Practical lesson on the use of drones and mission planning.

4 October 2018 Thursday

- 9.00 Appointment to Piazza Guerrazzi: Participants are transferred to the fly camp
- 10.00 Practical fly lesson
- 12.30 Lunch time (lunch self-provided by participants)
- 14.30 Practical fly lesson

5 October 2018 Friday

- 9.00 Appointment to Piazza Guerrazzi: Participants are transferred to Cusano Mutri
- 10.00 Acquisition of the images
- 14.30 Visit Cusano Mutri