Minutes

2nd Transnational Meeting

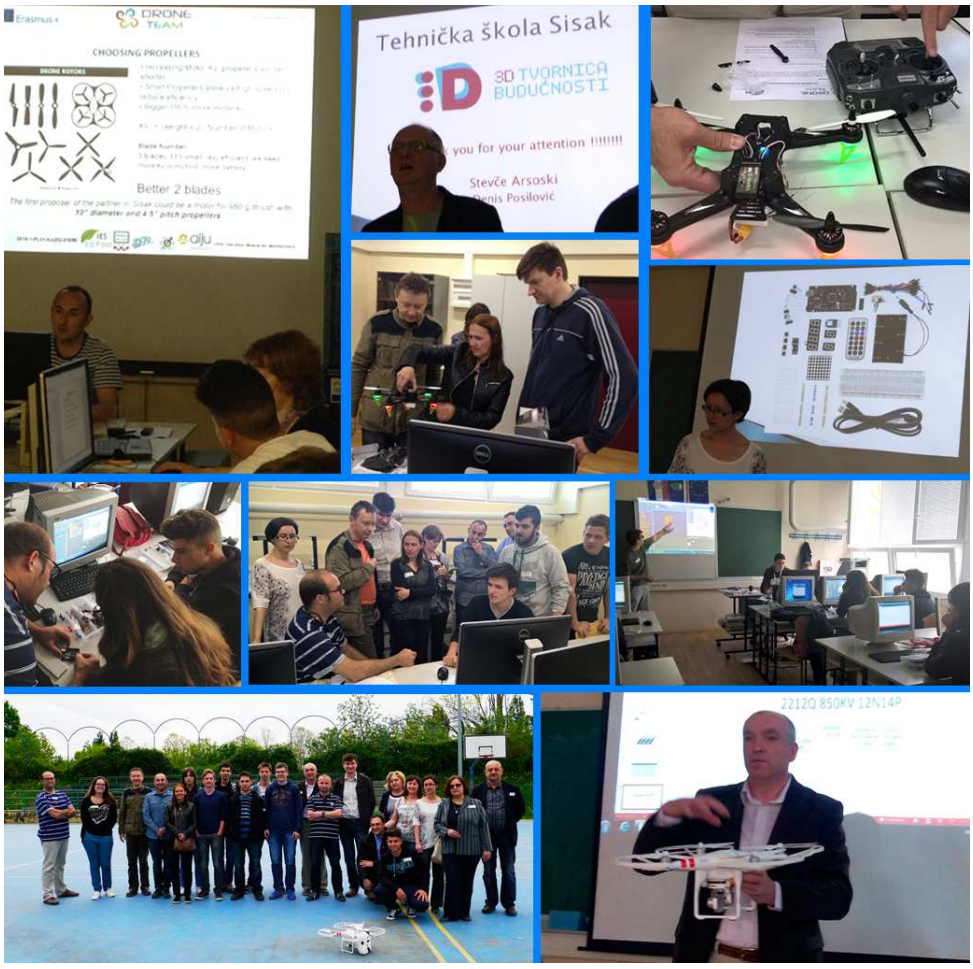
Sisak (Croatia) 18-19 April 2016

Participating Partners: IES La Foia –Spain (Foia), Tehnička škola Sisak – Croatia (Sisak), Zespół Szkół –Poland (ZS10), Šolski Center Krško-Sevnica –Slovenia (Krsko), Asociación de Investigación de la Industria del Juguete, Conexas y Afines – Spain (AIJU).

Attendees:

Teachers: Irene Pastor (Foia), Jorge Brotons (Foia), Davor Malović (Sisak), Davor Lužaić (Sisak), Mario Kus (Sisak), Nenad Bojčetić (Sisak), Zrinka Tomljenović (Sisak), Małgorzata Jurczyk (ZS10), Wirginia Tomczyk (ZS10), Franci Uduč (Krsko), Zoran Tkavc (Krsko), Svetlana Novak (Krsko), Marjana Plavljanić (Krsko), César Carrión (AIJU), Ignacio Seguí (AIJU).

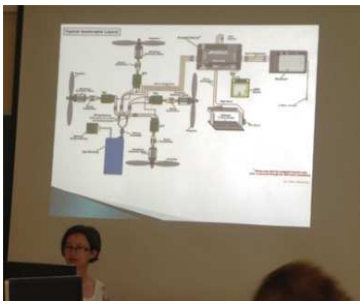
Students: César Martínez (Foia), Lucía Seguí (Foia), Martin Volčanjšek (Krsko), Blaž Pirc (Krsko), Simon Javeršek (Krsko), Ambrož Janc (Krsko), Domen Gunčar (Krsko), Bernardo Kaukoović (Sisak), Ivan Jantak (Sisak)



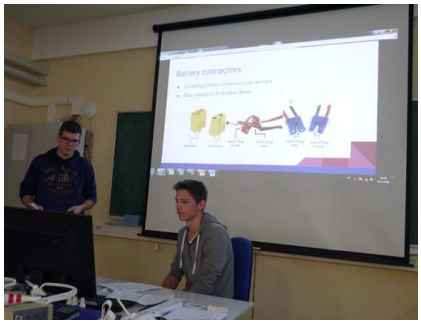
Day 18th April 2016

- After being welcomed of attendees, the meeting starts reviewing the Agenda at 9:00h.

- **Overview of partners' role:** Mr. Davor Lužaić (Sisak) presented the study and selection of engines for the drone. He explained the terminology used for engines. The basic rule is that drone engines must be able to produce twice and a half in thrust according to the total weight of the drone. Mr. Davor Lužaić also showed a popular commercial toy drone: DJI Phantom Standard Toy quadcopter. Later a flight demonstration was performed



- Ms. Wirginia Tomczyk (ZS10) explained that the flight controller selected is ArduPilot APM 2.6. While for the first version of drone we will use the CC3D - Open Pilot controller (cheaper and for basic drone without camera). She explained their attending to Arduino Day, a 24 hours-long event where teachers and students could listen lectures and participate in workshops. ZS10 also presented the DroneTeam project in a local educational fair.



- Students from Krsko presented the study about batteries, defining all components and features. Greater autonomy of drone flight is the objective, but also the weight of batteries must be considered. The so-called battery C rating (discharge rate) is the most important. The balance between adequate supply to engines and flight autonomy must be optimised in battery. Therefore, battery must not have extra weight because C rating is high and is not used by the engines completely. On the other hand, a C rating too low can cause engines do not reach the necessary power and can result in damaged battery as underperforming battery can't release current fast enough to power engines properly.

- Mr. César Carrion (AIJU) showed the configuration of basic drone to be assembled by schools. Keeping in mind the studies of all schools, the basic drone will be gradually implemented during the project, improving this basic drone. The basic drone will permit to learn about components and how to assemble a first drone.

- While these presentations are made, students have a parallel agenda where students of Sisak explain to them the basics of the Arduino board. Teachers join them for a few minutes and follow this training and explanations. A derivative of the Arduino board, called Ardu Pilot, will be employed as a flight controller in the evolution of the basic Drone.

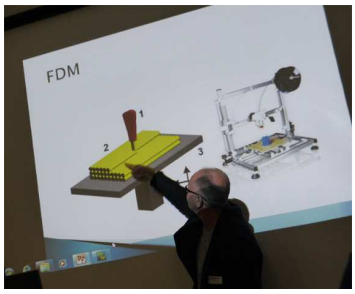
- Foia, as coordinator, distributed rules and stickers with the logo of the project to all partners in order to conduct internal dissemination with these promotional products. Meanwhile, Sisak distributed Droneteam t-shirts to those attending the meeting.

- **Consortium visited the** Tehnička škola Sisak facilities:

- At the end of the first day of an exhibition it is done with the Phantom III drone led by Mr. Davor Lužaić. Several students and teachers were able to test the pilotage of a commercial drone of these features.

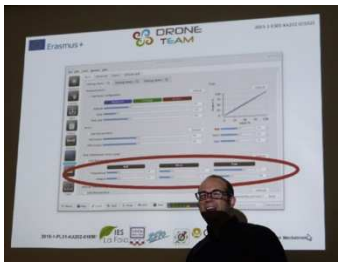
Day 19th April 2016

- Mr. Stevče Arsoski and Mr. Denis Posilović (Sisak) did a presentation of 3D printer technologies, types, characteristics, etc. They also performed a demonstration of a 3D printer and a project that has developed a model car for expeditions to the moon or to Mars, obtained from 3D printers, such as an application example.

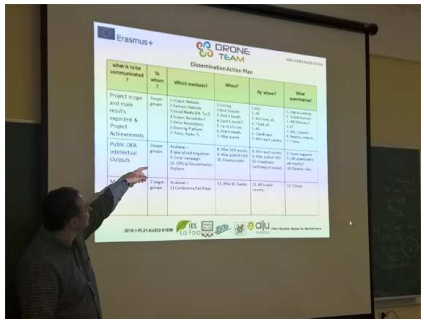


- Mr. Jordi Brotons (Foia) explained the propeller types, the main characteristics and the length of blades according to the engine: short propellers allow high speed, but reduce efficiency. The number of blades is also important and 3 blades reduce the efficient in a 33%, therefore are better use 2 blades, but must be more length. Another important concept to pay attention is the Pitch or distance between turns of propellers. The most commonly used materials in the manufacture of propellers for drones were also explained. The proposal is to develop propellers designing a mould and using a vacuum casting process.


- Mr. César Carrión (AIJU) showed the basic drone and explained main concepts related to calibrate drones and rotational axis that we need to calibrate: Roll, Yaw, Pitch.



- Ms. Irene Pastor (Foia) explained and answered partners' questions about Project Management, Financial and Contractual Rules and Budget Categories.



- Mr. Ignacio Segui (AIJU) briefly reviews the DroneTeam Dissemination Plan and Quality Plan.

- Next steps: all schools will assembly the basic drone. AIJU will support this assembly in case of any problem.
- **Date for the 3rd Transnational Meeting is fixed:** 26th-29th June 2016 in Zabrze (Poland). 27th and 28th meeting days.

- **Cultural visit.**

After meeting time, Consortium did a visit the Sisak Castle guided by expert of Local Museum.





- **Quality survey:**

The meeting ends with a quality survey of this 2nd Transnational Meeting. The result is that all attendees were satisfied with the meeting and hospitality of teachers and students of Tehnička škola Sisak.