

**AERIAL
UPTAKE**
Interreg Europe



European Union
European Regional
Development Fund



AERIAL UPTAKE
aims to create
supportive regional
policies for unmanned
aerial systems by
exploring needs and
barriers to innovation
and commercialisation,
including society's
acceptance of UAS.

www.interregeurope.eu/aerialuptake

ACTION PLAN

Osijek, Croatia



Research &
innovation

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1. General information

Project: Removing barriers to the uptake of innovative Unmanned Aerial Systems in the EU

Partner organisation: City of Osijek (Grad Osijek).

Other partner organisations involved:

Region: Croatia

NUTS2 region: HR04 Continental Croatia (since 2021 HR02 Pannonian Croatia)

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2. Background

Aerial Uptake project

AERIAL UPTAKE brings together local / regional public authorities and key players of the UAS sector from 6 European regions, being pioneers in the creation of a single European drone market. They exchange and transfer knowledge to unleash the potentials of UAS technology for civil and commercial usages. Besides exploring and addressing the key needs and bottlenecks of innovation and commercialization of UAS, partners investigate tailored solutions for increasing societal acceptance by enhancing and articulating positive social impacts of drone technology.

During the course of the project, partners learn from each other exchanging experiences regarding the methods, models and best practices that can help to implement an effective action plan in each of the five partner region (in the region of the Advisory Partner, no action plan is being prepared). The ultimate goal of an action plan is to set the target and structure for revising the policy instruments in the five participating regions towards a more open market for using drones in commerce and business.

The aim of creating the action plans in all regions corresponding to the overall project objective which is:

TO IMPROVE THE PERFORMANCE OF REGIONAL DEVELOPMENT POLICIES AND PROGRAMMES BY STRENGTHENING THEIR CONTRIBUTION TO THE DELIVERY OF NEW TECHNOLOGIES AND FIELDS OF APPLICATION OF UNMANNED AERIAL SYSTEMS (DRONES) FOR CIVIL AND COMMERCIAL USAGES.

In order to reach the above objective, AERIAL UPTAKE implements interregional learning activities among nine partners and six EU regions along three sub-objectives:

FOSTERING INNOVATION by creating a favourable environment and policy interventions, that facilitate experimentation, real-life testing and demonstration of novel UAS technologies (i.e. through specific experimental zones, urban living labs, removing specific regulatory and administrative barriers, etc.);

PROMOTING MARKET UPTAKE, through supporting and encouraging enhanced (quadruple helix) collaboration, networking and clustering among businesses, research organization, public authorities and potential end-users, also allowing cross-overs among different sectors;

IMPROVING SOCIETAL ACCEPTANCE of new UAS technologies by addressing ethical, legal and social concerns, raising public demand for new solutions and due consideration of potential social impacts and benefits, in. e.g. evaluation / monitoring criteria applied in addressed policies.

AERIAL UPTAKE brings together local / regional public authorities and key players of the UAS sector from 6 European regions, being pioneers in the creation of a single European drone market. They exchange and transfer knowledge to unleash the potentials of UAS technology for civil and commercial usages. Besides exploring and addressing the key needs and bottlenecks of innovation and commercialisation of UAS, partners investigate tailored solutions for increasing societal acceptance by enhancing and articulating positive social impacts of drone technology.

The commercial UAS (unmanned aerial system) industry, commonly known as drones, is a rapidly expanding sector on a global scale, bearing large potentials for economic growth, jobs, innovation.

Aerial Uptake started on August 1, 2019, and its first phase will run for two and a half years.

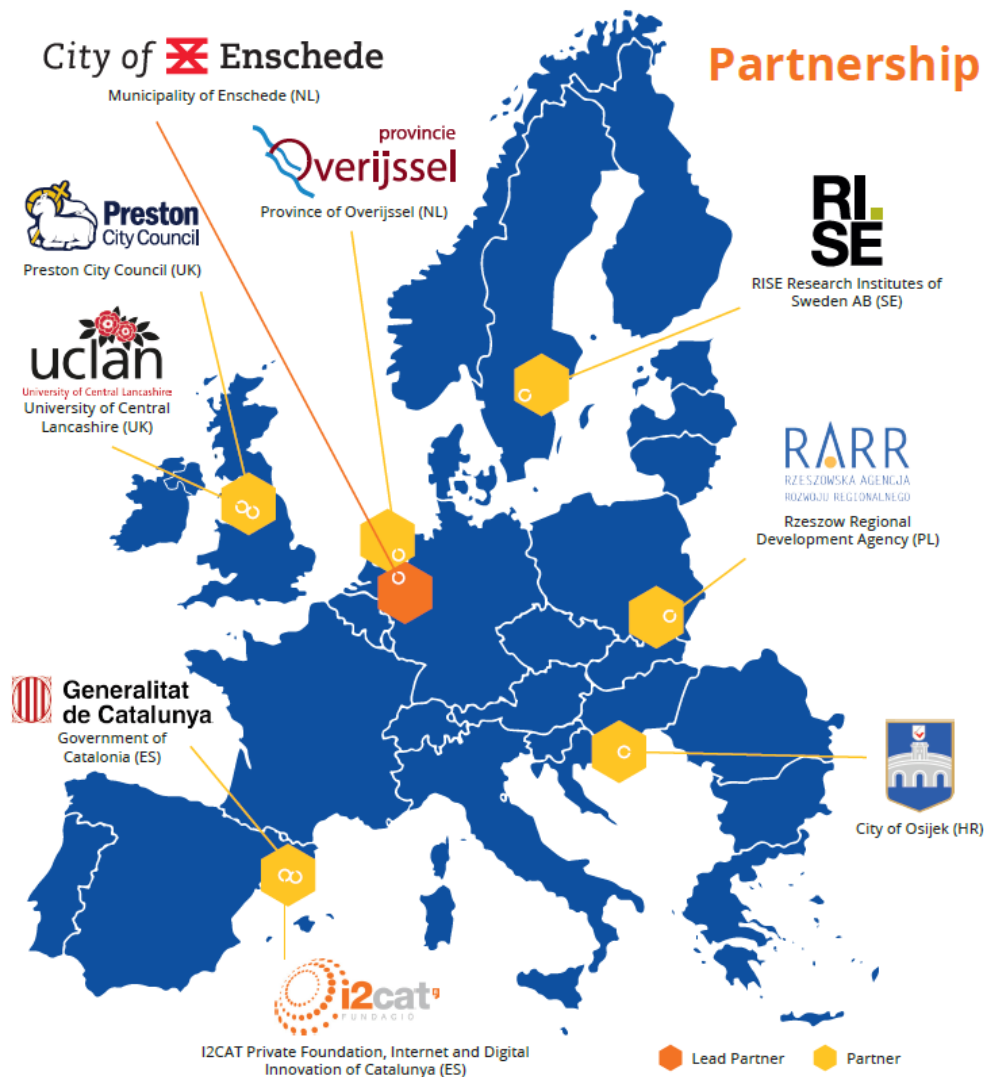
The project partners consist of municipalities, regional governments and research institutes: The City of Enschede (beneficiary) and Province of Overijssel (the Netherlands), Government of Catalonia and I2CAT (Catalonia, Spain), City of Osijek (Croatia), Rzeszow Regional Development Agency (Poland), Preston City Council and University of Central Lancashire (United Kingdom) and RISE Research Institutes of Sweden.

Total budget/expenditure: EUR 1.376.167,00

European Union funding: EUR 1.169.741,95

Co-financing sources: ERDF

The budget for the City of Osijek project activities is EUR 145.500,00.



Regional context

Following the example of the rest of the world, drones in Croatia currently have a great potential in the civil protection and public service sectors, where the aspiration is noticed and the usefulness of UAS in search and rescue, firefighting operations and infrastructure surveillance operations has been recognized. Public demand for services best and most efficiently performed by drones contributes significantly to the development of drone technology market, technology-based SMEs and start-ups, and it will, hopefully, stimulate research, innovation and development in connection to the UAS technology.

The Osijek city government was among the first in Croatia to realise the importance and potentials of drone technology, both in the public-service and commercial sectors.

In 2018 the City of Osijek with Osijek Fair Ltd. (city-owned company founded for organising trade and promotional fairs) launched the first Osijek Drone Expo, which offered rich 2-day programme with international participation including drone exhibitions, round tables and lectures, workshops for putting together of drones, computer-simulated drone races, Croatia Cup drone race, socialising with exchanges of experiences and know-how, et al. Osijek Drone Expo 2019 offered even richer programme in 3

separate, yet related areas / parts: exhibition and presentation area / part, racing area / races and conference area / part. That year the event was organised in much larger City Arena. Unfortunately, due to the COVID-19 pandemic the events were cancelled in 2020 and 2021.



The City of Osijek itself pioneered the drone usage for public service during the first lockdown after the outbreak of COVID-19 pandemic, in April 2020. A central air surveillance system powered by the usage of drones has been established at the 112 centre. A control room for air surveillance has been set up, where videos from several multicopters are shown in real time, which are constantly flying above the markers placed at critical points in the area of the city of Osijek. This equipment and control room was used by the Association for the Promotion of the Value of the Civil Protection System. The goal was to monitor the implementation and compliance with the prescribed measures of the Civil Protection Headquarters of the Republic of Croatia in the fight against COVID-19. The City of Osijek received a request for the use of two city-owned drones (bought for this purpose) from the SPAS Association. SPAS promotes the value of civil protection system, which is an integral part of the State Civil Protection Intervention in Osijek, Civil Protection Administration and Regional Civil Protection of Osijek Office, with the final aim of increasing the safety of citizens affected by the health crisis caused by the COVID-19 virus. Stated technical and operational solution is the result of cooperation of various stakeholders (Institute of Public Health, local committees, hospitals, clinics, and civil protection headquarters) which have enabled easier monitoring and compliance with measures prescribed by the Civil Protection Headquarters of the Republic of Croatia. In accordance with the above, the City of Osijek and the Association for the Promotion of the Value of the Civil Protection System concluded an Agreement on the transfer of two drones owned by the City of Osijek with the aim of increasing the safety of citizens.

Osijek Airport Ltd. (co-owned by the City of Osijek, Osijek-Baranja County and the Republic of Croatia) has started a project of using drones for birds air control. It is a reliable, manageable, safe and humane way to help reduce the bird population at Osijek Airport, thus considered one of the possible adequate solutions. The main perspective is to reduce large species and total bird strikes at the airport by emitting frequencies and sounds disturbing the birds, who have been shown to recognize drones as predators. They also contracted airport rental for drone operations, i.e. cargo transport by air on the route of one-day distances (range of UAV 2,500 km). To become Droneport, they decided to waive most of their landing and take-off taxes in favour of other benefits for our airport, city and region with a 10-year contract. They have become a transit point and connect directly with all other gateways in Dronamics' network.

Osijek Public Firefighting Brigade has also recently started using drones for fire data collection and control / monitoring during and after extinguishing operation. This is a sector in which drone usage will definitely grow constantly.

The academia and public sector have embraced drones more than business sector in Osijek - Faculty of Agrobiotechnical Sciences Osijek regularly uses drones in their projects, agriculture production in

experimental fields, respective data collection for scientific and production purposes, and teaching as well (*Protection and preservation of Bilje Steppe-like grassland* project, the main components of which can be replicated to agriculture and forestry). Some other Osijek faculties (mostly STEM ones) use drones regularly in their everyday scientific, teaching and practical activities: Faculty of Electrical Engineering, Computer Science and Information Technology Osijek uses drones in energy audits. Since 2019, these 2 faculties have jointly been creating a new graduate programme in English – *ICT in agriculture*.

In terms of commercial application, Croatia lags behind the rest of the world, especially in the agriculture sector, which is considered to be one of the most convenient industries for drones. Only a few Croatian farmers use drones in their work, but the number has started increasing lately. Journalism, tourism promotion and marketing industry have largely embraced the new technology and the videos and images made by drones can often be seen in news programs or internet portals. Most geodesy and construction companies also intensely use drones in their everyday work. According to available information, Croatian postal service has no intention of introducing drones into its business in the near future, except for experimental deliveries to remote destinations (Islands), which might become regular only for these remote and isolated locations. Large multinational companies have been forced to consider this idea with their innovations. Insurance companies are also far from using this new technology in larger scope, but the space and need for drones in Croatian companies exists and it is only a matter of time before new business models improved by drones start to be used in Croatia as well. The predictions are that drones will become the daily routine of any successful business in various industries. Without them, it will not be possible to imagine performing certain tasks, which, in present time is a one man's task. Drones are robots in the sky that will make our lives easier and change it fundamentally. Even today, one can look and explore places he could not even imagine ten years ago. The amount of data drones can collect in a short amount of time is amazing, thus saving the enormous quantity of time and physical work. While a certain group of people are frightened of or sceptical towards drones, we need to embrace the new technology as soon as possible and make the most of it.

In Osijek area, which is dominantly agriculture-oriented (a vast fertile plain), there are many good examples of drone usage in commercial and public services. As for agriculture, we have 2 large agricultural companies already intensely using drones in their production (Belje plus LLC, Osatina Group Ltd.), in which drones are used during the crop cycle in several ways: soil and terrain analysis, planting and sowing, precise crop treatment with pesticides, land treatment with fertilizers, irrigation, crop health assessment, collecting different necessary data. Their usage of drones protects the environment and achieves savings in the application of fertilizers, but also achieves significant timesaving in visiting arable land and monitoring the condition of crops. By using drones, they reduced the cost of raw materials and increased labour productivity. Since Belje has 20,000 hectares of arable land, in cooperation with experts, they are developing drones with greater range and wider functionality for the needs of agricultural production.

An Osijek-based start-up Orqa Ltd. is today world-renowned for its product Orqa FPV. One - drone control goggles. These glasses are produced in Osijek, where the company is headquartered. The founders turned their innovation into a successful product commercialized globally, which was their aspiration. Orqa FPV glasses have been in commercial use since November 2019 and have been sold in more than fifty countries around the world, with the biggest market in the USA. Orqa FPV goggles are the best in the world for navigating and operating drones and can also be used in simulation and gaming on mobile phones and computers. In the beginning of 2021 Orqa Ltd. signed the contract with the City of Osijek buying a plot in the new IT Park zone, and in July 2021 they presented the conceptual design of their

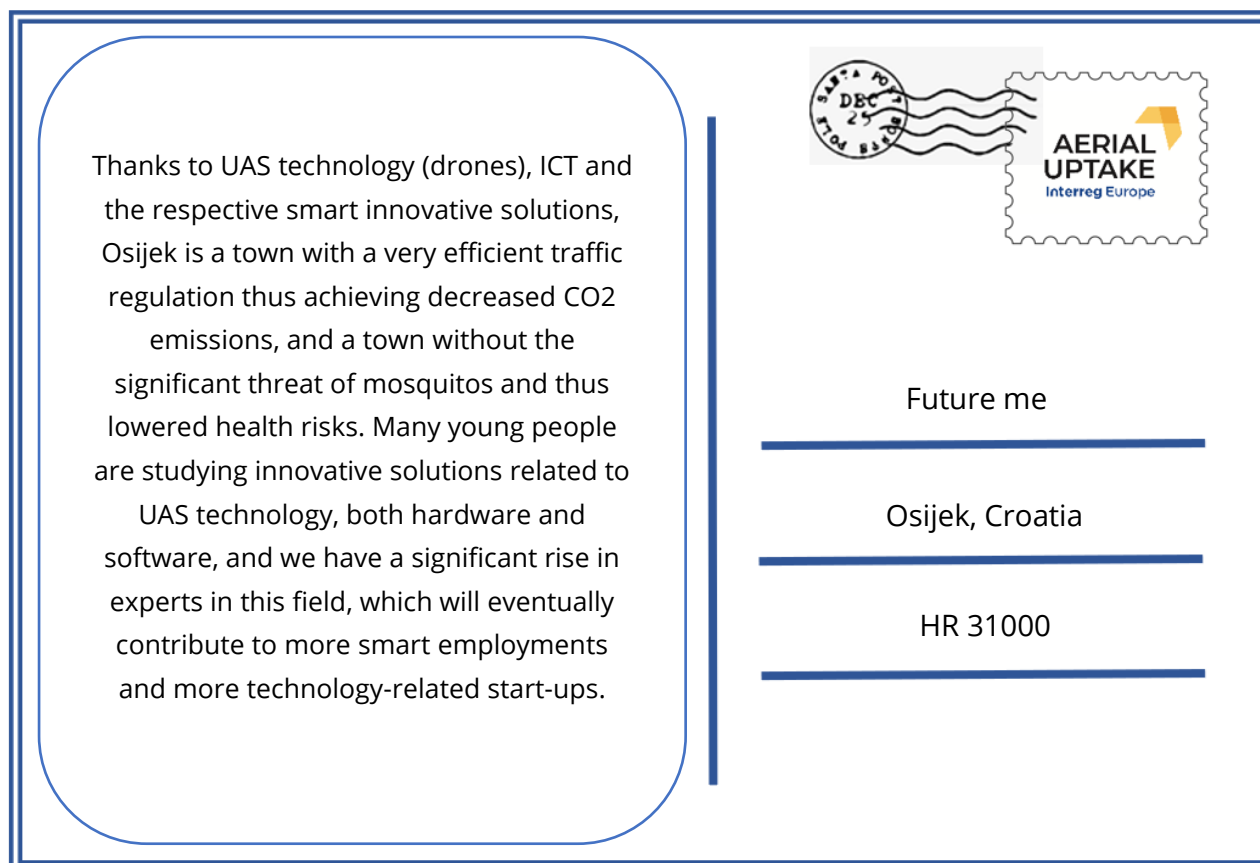
future building. They need more space because they grew from 10 to 50 employees, which enabled them innovation and development: they developed FPV Drone Racing And Freestyle Stimulator called SkyDive, and recently they presented their new FPV.Play for gamers which can make one fly one's favourite mobile simulator on your goggles. Besides gaming, they started with tourism promotional virtual flights (city skyline, landscapes in the surroundings – virtual tour of Kopački rit Nature Park).

Since Osijek is a strong ICT industry centre (almost exclusively software) in Croatia, it is only logical to expect it to become one of the Croatian UAS technology forerunner. It, actually, already partially is the UAS-related innovation centre thanks to Orqa Ltd., the producer of the world's best FPV.one drone control goggles. Osijek public sector strongly contributes to the development of UAS sector in the city and region by constantly increasing the demand for public services performed by UAS (firefighting operation control, traffic monitoring and management, municipal equipment and infrastructure surveillance related to vandalism and other damaging events). The new city government is even considering the potential of mosquito spraying treatments by means of drones for the upcoming years.

Vision

New part - you can use the inputs of TF-Inno

Postcard from the future:



The City of Osijek plans the modification of ITI project called *E-mobility*, related to our public transport system (City of Osijek in the partnership with the city-owned company 'City Passangers Transport/ Gradski prijevoz putnika'). Inspired by the examples from other EU partners, we decided to acquire 2 drones with developed software for city traffic monitoring and management within this project. Also, several city employees (including 2 project team members in both projects – Aerial Uptake and E-mobility, S. Kukić and I. Galir) will be trained to fly drones, including some project team members.

We plan to introduce a new change into the annual Programme of Public Needs in Technical education sector and launch summer and spring Drone school for primary and secondary school children in order to popularise and promote UAS technologies starting with the youngest ages. This will affect the City's local policy, but, since Osijek Centre for Technical Culture gathers both the city and the county associations of technical culture and their CSOs, we expect the programme to expand to the whole region.

This project will also influence the City's future plans: Osijek's new mayor Ivan Radić announced the plan to solve the great regional health risk caused by mosquitos by using drone technology. We and Osijek Airport had to postpone the plan of entering the partnership with the drone-delivery company

Dynamics and shift it to the beginning of 2023 since the EC's regulation full enforcement was also shifted to the beginning of 2023.

3. Policy context

The Action Plan aims to impact:

- Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument

Policy instrument addressed:

Template part. 2:

- Name of policy instruments: 1) ITI mechanism related partly to the Competitiveness and Cohesion Operational Programme (ERDF, CF) and partly to the Efficient Human Resources Operational Programme (ESF) for 2014-2020; 2) the City of Osijek annual Programme of Public Needs in Technical education sector
- Institution responsible for addressed policy: 1) The City of Osijek, which is Level 1 Intermediary Body and the centre of Osijek Functional Urban Area; 2) The City of Osijek,
- Proposed self-defined performance indicator: Traffic regulation drones acquired, equipped and functional / educational programme implemented for children and youth (introduction into the basics of drone usage and controlling/flying)
- Target value of the performance indicator: 2 drones acquired, equipped and functional in traffic regulation; software for traffic management developed; decreased number of traffic jams at the main city crossroads/ 20 children or youth introduced into the basics of drone usage and controlling/flying

The ITI mechanism in Croatia is conceived in such a way that, following the cities' applications, the Minister of Regional Development and EU funds brought a decision on Functional Urban Areas Zagreb, Split, Rijeka, Osijek) and 3 smaller urban areas (Zadar, Pula, Slavonski Brod) in Croatia and approved of their territorial scope (with the big cities as centres of these functional areas). These cities signed the Agreement on ITI mechanism implementation with the Ministry of Regional Development and EU funds, thus receiving the Level 1 Intermediary Body function, which we share with this Ministry. The Strategy of Osijek Functional Urban Area Development till 2020 was brought in 2016 by Osijek City Council as a basis for Integrated Territorial Investment (ITI) financial allocation of the Osijek Functional Urban Area. The total amount of the ITI scheme for Osijek Functional Urban Area is 39,942,741.39€ for the period 2014-2020 (33,951,330.18 Euro or 85% co-financed by ESI funds - ERDF, CF and ESF combined). It is based on selected OPCC and OPEHR 2014-2020 SOs, which include among others 3a2 Enabling favourable environment for business creation and development; 8ii1 Increase employment and rapid integration of NEETs into the labour market; 10ii3) Improving adult education system and upgrading skills and competences of adult learners.

The City of Osijek is planning to elaborate a kind of Smart City Development Action Plan 2021-2030, so drone technology development and innovation stimulation will definitely play an important part in it.

The policy context and the contribution to improve the policy instrument

We want to achieve much higher level of awareness on drone usage potentials and advantages related to public needs and services and its market and job growth potentials. With our pilots we aim to show how public needs can be fulfilled in a more efficient and better way (traffic control, mosquitos) and to influence younger generations to take more interest in new, smart, innovative technologies by promoting STEM professions.

The City of Osijek initially planned the change of our strategic project called *IT Park Osijek*, inspired by the *Aerial Uptake* project. This project was previously identified as the strategic one within the Strategy of Osijek Functional Urban Area Development till 2020, implemented the basic infrastructure construction works in the IT business zone, starting in June 2020. One of the project activities is the elaboration of the main design for constructing the IT-business related incubator - accelerator building, then the building construction and equipping follows. The project change triggered by the Aerial Uptake project was planned in the form of the additional construction of a small experimental drone test site on the roof of this accelerator/ incubator building in order to provide the test zone for SMEs within the UAS sector. But, unfortunately, the construction of the building is late due to the fact that the building permit hasn't been obtained yet. This caused the complications which would disable us to implement the change in Phase 2.

Therefore we decided to focus on another project identified within the same ITI mechanism and within the same strategic framework - The Strategy of Osijek Functional Urban Area Development till 2020. We will modify the project called *E-mobility*, related to our public transport system (City of Osijek in the partnership with the city-owned company 'City Passangers Transport/ Gradski prijevoz putnika'. The project manager of this project is Srećko Kukić and one of the team members is Igor Galir, both also *Aerial Uptake* project team members. Within this project we decided to acquire 2 drones with developed software for city traffic monitoring and management. Also, several city employees will be trained to fly drones, including some project team members (S. Kukić, I. Galir). The drones have already been purchased and now the software programme will be developed and the transport company's and city's employees trained to fly and control drones.

The investment in research, development and innovation (RDI) in Croatia is much lower than in rest of the EU, equally in the private sector as in the public. Lately the situation has improved significantly, exclusively thanks to EU funding. Therefore, the City of Osijek is planning to stimulate more RDI projects and cooperation. In this respect, the City is planning to elaborate the [Smart City Development Action Plan 2021-2030](#), within which UAS / drone technology development and innovation, both in hardware and software, will definitely play an important part in it. Some stakeholders have already taken the steps towards this direction independently of the City of Osijek: the Faculty of Agrobiotechnical Sciences Osijek and the Faculty of Electrical Engineering, Computer Science and Information Technology Osijek have jointly been elaborating a new graduate programme in English ICT in Agriculture.

4. Action 1: Drones for Traffic Monitoring and Management

Within the ITI-designated and CF co-funded *E-mobility* project we decided to acquire 2 drones with developed software for city traffic monitoring and management. Also, several city employees will be trained to fly drones, including some project team members. The drones have already been purchased and the software programme developed and the transport company's and city's employees will be trained to fly and control drones. We intend to monitor the traffic jams in most-crowded city junctions during rush hours, as well as the number of users of our public transport services, including the newly introduced 'clean' ones through this project (public bicycles and electric bicycles).

Background

Good practice(s) and project learnings

Several good practice examples influenced our action planning process intensely, especially in the view that we had to change our initial plan. Actually all the good practices that contain the segment of surveillance, monitoring, control, collecting data and management inspired us towards defining our final plan. The relevant good practices for us are primarily those focusing on efficient, fast and precise data collecting: *Pollution data acquisition with UAS* and our stakeholder's practice related to *Bilje steppe-like grassland inventory* inspired us in relation to different data collecting potentials, while *Drones for Roof Inspections*, *UAV's for surveillance of the extinguished perimeter – VIPEX*, *ALDrone* and *UAV Gas pipeline inspections* inspired us related to many various potentials of inspection, surveillance of many various processes. In September 2019 we started the *E-mobility* project, so we got the idea from the Aerial Uptake project that we could improve the traffic situation in Osijek by means of drones which would monitor the traffic in most-crowded junctions during rush hours in order to improve the flow of vehicles, thus decreasing the CO2 footprint in the city and its surroundings. So in June 2021 our *E-mobility* project partner, the city transport company, acquired 2 drones and had the respective software developed together with them. Also our own good practice called *Promoting civil protection value systems - COVID-19*, which is actually a surveillance system using drones during the COVID-19 1st lockdown in spring 2020, proving to be a very efficient and reliable tools of surveillance and aid in prevention of big gatherings. In Croatia it is easy to use drones because we have a very efficient national system for applying and obtaining licences, which is in a form of an online application. Several companies and institutions already use drones on a daily basis in their business (HexaWorx Ltd, AIR-RMLD Ltd. - *UAV Gas pipeline inspections*; Faculty of Agrobiotechnical Sciences Osijek - *Bilje steppe-like grassland inventory*; Geofly Ltd. - *Drones for terrain mapping, GIS, creation of digital terrain models, etc.*). There are relevant regulations and established practice, so this will present no problem.

Action steps and activities

Detailed presentation of the action and its steps:

In June 2021 our *E-mobility* project partner, the city transport company, in cooperation with the City project team acquired 2 drones and had the respective software developed. In May 2022, after the future drone pilots' training, we plan to start the 3-month-long testing process, during which we'll be able to detect potential software problems and shortcomings and ask the service provider to solve those. The full application of drone monitoring of Osijek traffic is planned from August 2022. Within the *E-mobility* project the planned activities included the equipping and establishing the Traffic Control Centre (room), which was supposed to establish the surveillance system via several cameras in the most crowded junctions. These cameras would not be able to cover the whole city, and some junctions which only get crowded in rush hours would, in this case, be left uncovered and not monitored. Inspired by the *Aerial Uptake* project and good practice examples of easy and efficient data collecting by means of drones (mentioned in the previous section), Srećko Kukić as the *E-mobility* project manager and Igor Galir as a project team member decided to introduce 2 drones into this project which would gather information from different junctions not covered by traffic cameras. All the collected data will help create more fluent traffic and contribute to adequate traffic regulation. All this will be a first step towards smart management of city traffic, with the special emphasis on public transport (trams, buses, public (e-)bicycles). In the next stage the software solutions for smart, customized traffic management will be developed (traffic lights changing depending on the needs of public transport vehicles – trams and buses, or on rush hours and crowds in the junctions). This first stage of precise data collecting is thus extremely important for planning the following stages of fully smart and customized traffic management, which will finally lead to more fluent and efficient public transport and city traffic in general, as well as decreasing the carbon footprint of the city traffic. More efficient and quicker public transport will lead to increased use of public transport by citizens, which will additionally decrease the traffic's carbon footprint. The acquired drones will also be useful in plain surveillance of city junctions related to potential traffic accidents, important in early alarming and in establishing the exact circumstances and facts in accidents.

Stakeholder involvement in the action:

We will present the newly acquired drones and plan for traffic management and monitoring to our RSG members in the next meeting and ask them for their ideas, suggestions and proposals. We will also ask them about their other ideas, initiatives or proposals for us and try to stimulate them to create their new cooperation, joint business ventures and joint projects. Then the *E-mobility* project team, including the members from our transport company and maybe some of the city leading officials, will present the novelties and future plans to the wide public, citizens.

Timeframe and costs:

June 2021 – acquisition of drones – EUR 17.500

September 2021- January 2022: drone software development - EUR 5,000

February 2022 – May 2022: drone pilots education – EUR 3,000

May 2022 – July 2022: testing period

August 2022 ongoing: full application

Source of funding: *E-mobility* project, i.e. Cohesion Fund - OP Competitiveness and Cohesion 2014- 2020 – SO 7ii2 through ITI mechanism – designated to the Osijek Functional Urban Area

Target groups:

Citizens – traffic participants

Risk factors:

Not efficient enough software solution attained through a public procurement procedure

The City and city company's employees not trained properly for drone control

Public acceptance might be precarious – prevention steps need to be taken (timely and adequate communication with citizens)

Goals of the action

The *E-mobility* project was previously identified as the strategic one within the Strategy of Osijek Functional Urban Area Development till 2020, applied to the Call for proposals within Operational Programme Cohesion and Competitiveness, ITI designated SO 7ii2 – Increasing the number of passengers in public transport, aims at increasing the number of public transport users in Osijek Functional Urban Area including also newly offered services through this project (electric bikes, electric cars, electric car sharing). The primary goal is to monitor and manage the traffic jams and also count and monitor the usage of public transport services by means of acquired drones. If public transport vehicles (especially trams) will be able to pass usually crowded junctions in a faster and more efficient way, then the number of passengers and public transport users will definitely increase. Another, but not less relevant, aim is to monitor the state and potential dangers of traffic in different junctions and alarm of accidents, thus contributing to better overall traffic safety in Osijek.

Policy Change

Template part 3: Policy objective & What Policy Change is linked to this action? What is the aim of this action in relation to policy instrument and background situation?

We aim at the change of ITI mechanism related partly to the Competitiveness and Cohesion Operational Programme and partly to the Efficient Human Resources Operational Programme for 2014-2020. Within the ITI mechanism in Croatia the City of Osijek, along with 6 more larger urban areas, is the Level 1 Intermediary Body and the centre of Osijek Functional Urban Area. The E-mobility project within Operational Programme Cohesion and Competitiveness, addresses the ITI designated SO 7ii2 –

Increasing the number of passengers in public transport, aiming at increasing of the number of public transport users in Osijek Functional Urban Area including also newly offered services through this project (electric bikes, electric cars, electric car sharing). Through monitored and directed traffic flow, Osijek public transport (especially trams) will be quicker, more efficient and fluent in often crowded traffic spots in a faster and more efficient way and, consequently, the number of passengers and public transport users in Osijek will increase, which is also the *E-mobility* project's main objective. This project's main objective will then contribute to the SO 7ii2 – Increasing the number of passengers in public transport of the Operational Programme Cohesion and Competitiveness, which is one among 5 ITI designated SOs for Croatian functional urban areas.

5. Action 2: Drone Wizards

We plan to introduce a new change into the annual Programme of Public Needs in Technical education sector and launch regular, permanent summer and spring Drone school for senior primary and all secondary school children in order to popularise and promote UAS technologies starting with the youngest possible ages. This will affect the City's local policy, but, since Osijek Centre for Technical Culture gathers both the city and the county associations of technical culture and their CSOs, we expect the programme to expand to the whole region.

Background

Good practice(s) and project learnings

Actually all good practice examples as a total influenced our action planning process. Although we had to change our initial plan, in a content sense it was not such a big change – the present as well as the previous one deal with the education (the initial one was ITI designated strategic project *IT Academy* to be ESF-funded, but the funds were cancelled in June 2021, we had to abandon this plan and change the activity). The amount of possibilities and potentials of drone technology influencing the public sector as well as market development and job growth presented to us by the partners from more developed regions inspired us towards defining our final plan and not giving up the education of young generation as a principle, so we decided to intervene into our local policies, within our own scope of authority. Since we see this youth UAS education and training as a starting point in development of Osijek Drone Network with the perspective to grow into a hub / centre, we especially found inspiration by the good practices called *Catalonia Smart Drones*, *Rzeszow's UAS Cluster*, *Enschede's Drone2Go* and *Ethics Commission* as well as Lancashire's Ethical board as joint initiatives and networks of the public authorities and the industry of drones with technological centres, universities and other sector entities with an aim to promote the sector of drones in their regions. Through these examples did we only realise how much we are lagging behind the more developed EU regions and how much we can learn. Unfortunately, the pandemic prevented the most efficient interregional learning through physical contacts and site visits.

Therefore we'll do everything to promote these new technologies with our youth, taking smaller steps at the beginning and boosting them gradually. We'll also promote and stimulate the idea of Osijek Centre for Technical Culture initiating our Drone Cluster or network along with the University of Osijek, Secondary School of Electrical engineering and Traffic (STEM centre of competence) and some SMEs from this sector (HexaWorx, Orqa Ltd. etc.). The Centre for Technical Culture has already made the initial steps in this direction as a co-organiser of Osijek Drone Expo (3 editions so far). So, all the ideas, initiatives and programmes implemented by the mentioned project partners' good practices (clustering, networking of UAS sector) serve as inspiration and stimulus to our Centre as a future driver of UAS networking in Osijek region. Before we can start forming a drone cluster / centre / hub, we need to make sure that we create the critical mass of individuals who will carry the future developments and progress in the region's UAS sector – therefore we have to start with youth, enhancing at the same time the capacities and enriching the experience of teachers and instructors.

Action steps and activities

Detailed presentation of the action and its steps:

In October we usually start the preparation of the new budget , so we'll start with planning for 2022 in Oct. 2021. The City of Osijek Budget encloses also the annual Programme of Public Needs in Technical education sector, which is always set at a certain funds level and now we plan to increase it slightly or change the existing programmes slightly. First we'll analyse the current Programme of Public Needs in Technical education sector for 2021together with the Department for Education and see which programmes were successful and how attractive they were to youth. Then we'll include the extra funds for Youth UAS Education into the 2022 Programme proposal. In November or December 2021the Osijek City Council will be voting the City of Osijek budget for 2022 and accept our proposal.

In January 2022 Osijek Centre for Technical Culture will start developing and preparing the new educational programme, which will be implemented till the end of December 2022 in the form of 2 courses: the spring and summer schools of drones, including participation in Osijek Drone Expo 2022, if the Pandemic-related conditions allow it. The intention is to make this programme permanent and regular during spring and summer school breaks.

Stakeholder involvement in the action:

Osijek Centre for Technical Culture is one of our RSG members and also an institution founded by the City of Osijek. We will present the new plan to our RSG members during the next meeting and ask them for their opinions, suggestions and proposals for UAS-related informal education.

They will be invited to contact us also by e-mail or telephone, should they think of something new or important later on.

Timeframe and costs:

October 2021 preparation of the new budget for 2022 – planning the extra funds for Youth UAS Education

November / December 2021 – voting the City of Osijek budget for 2022

January – April 2022: developing the new UAS youth education programme: EUR 2.000

April - December 2022 implementing the UAS youth education programme: EUR 2.000

Risk factors:

Too many interested young people – prospect of turning down some potential participants due to lack of professional teachers and funds

Goals of the action

The primary goal of this action is to promote and raise public awareness of the UAS technology potentials in contemporary times in public services, regional economic and business development as well as related job growth. We'll put the special focus on public services like security and saving lives (search&rescue operations, medicines and medical equipment delivery in hard-to-access terrains and deprived areas, fire surveillance and monitoring of extinguished areas, security surveillance and crime prevention, traffic monitoring, data collection and management, potential new service of mosquito control et al.) But, it is not only sufficient to promote and raise public awareness on drone potentials, it is also of key importance to prepare young generations and educate them on how to use, implement and innovate new technologies. Therefore we'll enhance the existing drone education programme and widen it to more young participants – hopefully future UAS pilots and users, UAS-related software / hardware developers and experts, UAS-related SME owners and innovators. But first it is necessary to boost the capacities and know-how of the teachers as well as youth and children to become the drivers of future prosperity in UAS sector.

The secondary, somewhat far-fetched goal is to establish the Osijek Drone Cluster / Network potentially led by Osijek Centre for Technical Culture along with the University of Osijek, Secondary School of Electrical engineering and Traffic and some SMEs from this sector (HexaWorx, Orqa).

We'll also continue and upgrade the UAS sector promotion by organising further editions of Osijek Drone Expo. In future we'll invite our Aerial Uptake project partners to participate in it and create added European value of this promotional, educational and business-technology-related event.

Policy Change

The respective policy in this case is the original local policy of the City of Osijek, implemented through the annual programmes of technical education sector, in accordance with the national Law on Technical Education. Each year the Programme is decided on by Osijek City Council, but the programme proposal is created by the City of Osijek and Osijek Centre for Technical Culture in cooperation. Thus, in the Programme for 2022 we'll strengthen and upgrade this Programme in relation to Summer and Spring schools of drones for children and youth. The aim of this upgrade is to introduce such upgrades related to new innovative technologies into this programme because the education and popularization of new technologies with young generation presents a firm foundation stone for technological development of this region.

