Annex 1: Resources to be committed to the 2nd RAWFIE Open Call

The following tables describe the resources, which will be made available to the 2nd Open Call by each testbed.

Table 1: Testbeds to be made available for the 2nd Open Call

Testbed	Resources Available	UxV/activity type	Does your experiment require the testbed (Y/N)?
HAI	HAI's industrial complex is located in Tanagra around 65 km North of city of Athens. The test-bed facility consists of a runway of around 500m which can be used for takeoff of wing UAVs. The available area will be appropriate for launching up to 10 UAVs (wing or helicopter)	UAV Outdoor	
HMOD	Salamina straits, a narrow passage between Attica and the island of Salamina, in which the naval traffic is heavily regulated. The neighboring Naval Base of Skaramagkas is able to receive, inspect, launch and store USVs. It provides military grade emergency services (i.e. crash, fire or rescue) and has the appropriate radar facilities and systems for tracking and surveillance. In the context of the project, extra telemetry and control facilities will be set in order to accommodate the needs of the experiments.	USV Outdoor	
CATUAV	CATUAV / BCN DRONE CENTER provides testbed facilities consisting in a segregated air space of 25 square km, an airfield, a bioclimatic building and rural terrain of 14 Ha ready to install and deploy a wide diversity of components and infrastructures, with no restrictions or limitations, that can cover a wide diversity of experiments related to UAVs and UGVs.	UAV Outdoor CATUAV /BCN DRONE CENTER includes delivery of 2 UAVs for RAWFIE exclusive use as UAV nodes.	
RT-ART	The testbed is ETOPIA, a center for Art and Technology, (16,000 m2) located in Zaragoza, Spain, and consists of three buildings linked together. There are five testbed options: • S1 - Entrance Hall of ETOPIA building (425.91 m2). • S2 - Experimental gallery (around 800 m2). • S3 - Residence. Two floors of total area around 375 m2. • S4 - Showroom (390 m2). • S5 - Building terrace (600 m2)	UGV Indoor The testbed includes 4 TurtleBot 2	

MarEH4 EU	DFKI RIC Maritime Exploration Hall (MarEH) in Bremen, Germany. This large (23x19x8m) basin is filled with salt water and allows to test surface and underwater vehicles	USV Indoor	
CESA DRONES	CESA provides 4 outdoor aerial testing sites : 1. Camp de Souge and HERM The main and permanent flight test area is located in Souge, near Bordeaux. It's a flexible restricted area with protection from industrial spying: 2800 ha reserved airspace, 2 000 feet above mean sea level and 800m paved runway. 2. HERM An access to this test area is given on demand, located in Herm (near Dax). 3. Vendays-Montalivet The third flight test area is located at VENDAYS Montalivet. It's a restricted military area, located on the Atlantic coast line, typically used for the training of Defense Ministry's General Delegation for Armaments (DGA) : 50 km of elongation and 7 km large allow long flight out of sight, 3 000 feet above mean sea and 600m x 15 m paved runway. 4. Biscarrosse The last testbed area is located at 85km S/W of Bordeaux, on a civil air area, under security of civil aviation, and allows 15 km of elongation, and 5 km large, 600m x 30 m paved runway and 800 m x 30 m grass runway.	UAV Outdoor	
Aeroloop	UAV simulation infrastructure based on a hardware-in-the-loop and software-inthe-loop approach, which will allow users to perform experiments in a flexible way, 24x7, without requiring any human on-site support	UAV (virtual) Virtual	

Table 2: UxV devices to be made available for the 2nd Open Call

UxV Devices	Resources Available	Specification	Number (#) of nodes needed for the experiment
NIRIIS	10 USV	• Boat size (L x W x H): 1,3mm x 40mm x 30mm • Gross Weight: 9kg • Material: epoxy resin fiberglass • Power: High Power Lithium Polymer Battery • Motor: Water-cooled brushless	

		• Operational range: 1000m • Endurance: Up to 2 hours • Speed: Up to 30km/h (8m/s) • Payload capacity: Up to 10kg • Steering: Off-set Rudder • Main Communication Frequencies: Main link:433MHz • Video Downlink: 1.2GHz • EO/Day Camera • IR Thermal Camera	
PlaDyFleet	10 USV	• Processing capabilities and data storage: NUC Intel Core i5, 1.6-2.7 GHz dual core, 3MB cache; SSD 120GB • Size and dimensions: 756x756x280 mm • Weight: 25 kg • Payload: 5 kg + water displacement • Battery: 12 V 600Wh AGM gel battery • Minimum and maximum autonomy: 2 -8 hours • Sensors: - Navigation – GNSS: Real Time Kinematic Global Positioning System (RTK GPS) - Navigation – Inertial: Inertial Measurement Unit (IMU) • Camera: Above water HD camera installed on all USVs • Underwater camera: Installed on one USV • Echo sounder: Single beam echo-sounder installed on one USV • Control software: ROS Indigo running Linux Ubuntu 14.04 • Compatibility with Apache Kafka architecture	
VENAC	12 networked UAVs in 2 different configurations: - 8 ultra-light Hyper Efficient UAVs that can hover for 90 mins and - 4 Heavy Endurance UAVs that can lift up	• Processing capabilities - Model: Raspberry Pi 3 Model B - CPU: ARMv8 Cortex-A53 BCM2837 64bit - Cores: quad-core - Speed: 1.2GHz - RAM: 1GB - Co-Processor: Dual Core VideoCore IV Multimedia 3D • Sensor types - GPS GNSS: U-blox M8N GPS - Dual IMU: 2 x Inertial Measurement	

	to 4kgs or hover for 120 mins	Units, MPU9250 9DOF and LSM9DS1 9DOF - Barometer: 1 x MS5611 altitude sensing with 10cm resolution - Variometer: 1x-700~10000m with 0.1m (high precision version) resolution - Temperature sensor: FrSky TEMS-01 for system temperature	
FLEXUS	10 USV	• Processing capabilities (type of processors, number of cores, speed): 1.2GHz quad-core ARMv8 CPU or 2GHz quad-core ARM A15 + 1.5GHz quad-core ARM v7 + single board computer for communications • Size and dimensions: 1m long, 0.5m wide • Weight: 10kg (approx., depending on WiFi solution) • Payload capability: 10kg • Battery: 200 Wh, lithium polymer • Number and type or sensors: GPS receiver, IMU, video camera • Number and type of integrated network components and supported communication interfaces: 2 WiFi interface cards + 2 omni-directional antennas • Minimum and maximum autonomy of the device: 1.2 hours @ 2m/s (typical), 4.5 hours @ 1m/s (typical) • Auto-return capability (return to the base station automatically) • Ability of the vehicle to operate as an access point • (Remote) Control interface: QGroundControl, MAVLINK protocol • Operating Systems Linux / OpenWRT • Over-the-air programming capabilities: Yes, through Wi-Fi • Provision of collision avoidance mechanism: Optional • Compatibility with Apache Kafka architecture • Data storage of the vehicle: Minimum 16GB storage, extendable via USB drive • Support of “safe mode” operation • Localization capabilities (e.g., GNSS):	

		GPS • Ability to operate in indoor/outdoor/mixed • environments • Compliance with standards: MAVLINK, JAUS, ROS • Operational conditions (e.g., day/night) and temperature limitations: Night and day. Recommended maximum external temperature is 40 degrees Celsius	

Annex 2: Experiment Work Plan and Timing

The submitted proposals referring to Activity 3 (RAWFIE-OC2-EXP-SCI) and Activity 4 (RAWFIE-OC2-EXP-SCI-SME) should sufficiently describe the experiment procedure, by covering the following sections:

1. Experiment design:
    - Description of the experiment
    - Use of the RAWFIE offered facilities
    - Why the RAWFIE testbed is needed for the experiment
    - Description of test scenarios, measurements and expected results of the experiment.
    - In the case of new testbed extensions, describe who will implement and deploy the extensions? (the RAWFIE partners or the proposer?)
2. Experiment Setup
    - Describe the experiment procedure.
    - Which components will be used
    - Implementation of the software to be used for the experiment
3. Experiment execution
    - Experiment running and evaluation of the results
4. Reporting
    - Reporting on the experiment outcome
    - Recommendations for improvements on the RAWFIE platform
5. Dissemination
    - Dissemination actions (conferences, workshops, FIRE events, etc.)
    - Set up of Demonstrations to be used for further promotion of the RAWFIE facilities

Timing:

- Duration: 12 months
- Major milestones:

- Experiment design
- Experiment set-up
- Experiment execution
- Experiment feedback
- Dissemination, showcase