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# ***FruitFlyNet***

**A Location-aware System for Fruit Fly Monitoring and  
Pest Management Control**

## **D2.1.1: Project presentation**

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Accountable	Beneficiary (AUA)
WP2 Leader	PP2 (NCARE)
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Due on	31.03.2014
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## Project details

Title	A Location-aware System for Fruit Fly Monitoring and Pest Management Control
Acronym	<i>FruitFlyNet</i>
Priority 2	Promotion of environmental sustainability at the basin level
Measure 2.1	Prevention and reduction of risk factors for the environment and enhancement of natural common heritage
Budget	Total budget: € 1.662.872,32 ENPI CBC Med contribution: 90% Project co-financing: 10%
Start Date	December 31, 2013
Duration	24 months
Website	fruitflynet.aua.gr
Email	fruitflynet@aua.gr
Contact person	Prof. Theodore Tsiligiridis, <a href="mailto:tsili@aua.gr">tsili@aua.gr</a> , +30 201 529 4176

## Project Consortium

**B: Agricultural University of Athens (AUA)**



ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ  
AGRICULTURAL UNIVERSITY OF ATHENS

**PP1: Agricultural Research Organization (ARO)**



**PP2: National Center of Agricultural Research and Extension (NCARE)**



**PP3: Council for Agricultural Research and Economics, Fruit Tree Research Centre (CRA – FRU)**



**PP4: University of the Balearic Islands (UIB)**



**Universitat de les Illes Balears**

**PP5: University of Thessaly (UTH)**





## Summary

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This document presents the FruitFlyNet project. It provides the project information, the partnership structure and the overall goals, including a brief description of the project, the overall and specific objectives, the expected results, the duration, the cost as well as the target groups and the final beneficiaries. It also contains the overall strategy of the work plan, the presentation and dissemination documents (slides, posters, brochures, etc.). The above dissemination documents have been prepared for presenting the project in the 1st Workshop on:

“Location Aware Systems for Fruit Fly Monitoring and Pest Management Control”

(<http://fruitflynet.aua.gr>).

Finally, the report presents the initialization work of the project website.

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# 1. Project Information

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**Project title:** A Location-aware System for Fruit Fly Monitoring and Pest Management Control.

**Acronym:** *FruitFlyNet*

**Project number:** II-B/2.1/0865/ENPI CBC MED/EU

**Programme:** ENPI CBC MED

**Grand Contract identifier:** 2438/49 of 30.12.2013

**Priority 2:** Promotion of environmental sustainability at the basin level.

**Measure 2.1:** Prevention and reduction of risk factors for the environment and enhancement of natural common heritage.

**Start date:** December 31, 2013

**End date:** December 31, 2015

**Duration:** 24 months

**Total budget:** € 1.662.872,32

**EC contribution:** 90%

**Project co-financing:** 10%

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## 2. Partnership Coordination Structures

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The **FruitFlyNet** project will be structured/monitored by the following project bodies:

1. **Project Coordination Board (PCB):** The Project Coordination Board (PCB) is chaired by the PC/TM and constituted by one representative from each partner and is the main decision body of the consortium. It is in charge of all formal decisions regarding: technical direction of the work, relations with the ENPI CBCMED Office, policies for promotion of results, administrative arrangements. In the view of minimizing management overhead and project costs, partners providing the PC, the TM and the WP - Leaders are required to appoint the same person as their official representative in the PCB.
2. **Project Steering and Technical Committee (PSTC):** The Project Steering and Technical Committee (PSTC) is chaired by the TM and constituted by the WP-Leaders. It's tasks are to agree on project technical planning, to submit project technical planning to the PCB for approval, to ensure proper interrelation among WPs, to enforce and guide the execution of the technical plan and to report to the PCB.
3. **WP (Activities, Sub-activities):** WP (Activities, Sub-activities) are constituted by technical contributors. Each WP (Activities, Sub-activities) will be chaired by a Leader responsible of carrying out the technical work. The terms "activity" and "task" can be used interchangeably.
4. **Local Supporting Groups (LSGs):** In order to ensure an effective impact of the **FruitFlyNet** activities on local policies, each country will set up a Local Supporting Group (LSG). The local bodies, such as local authorities, cooperative organizations, environmental bodies, etc., will ensure the adoption, dissemination and exploitation of the project results. Member of each LSG can be a person from each partner voluntarily involved in the project. The LSG board reports directly to PCB.



Type	Name	Acronym	Country	Pilot Area	Type
Beneficiary (B)	Agricultural University of Athens	AUA	Greece (EU)	Attiki	Academia - University
Partner (PP1)	Agricultural Research Organization	ARO	Israel (non-EU)	Negev, Arava	Academia - Research Institute
Partner (PP2)	National Center of Agricultural Research and Extension	NCARE	Jordan (non-EU)	Al-Balqa	Academia - Research Institute
Partner (PP3)	Council for Agricultural Research and Economics, Fruit Tree Research Centre.	CRA-FRU	Italy (EU)	Lazio	Academia - Research Institute
Partner (PP4)	University of the Balearic Islands	UIB	Spain (EU)	Baleares	Academia - University
Partner (PP5)	University of Thessaly	UTH	Greece(EU)	Thessaly	Academia - University

**Table 1: Partner's Table**



### 3. Project Overall Goals

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#### 3.1 The Project in brief

**FruitFlyNet** project aims to develop a Location Aware System (LAS) geared to prevent and reduce the environmental risk factors at the Mediterranean Sea basin level. It will contribute to the development and implementation of environmentally effective e-monitoring and ground spraying control solutions, based on prototypes, technological innovations, and knowledge transfer for specific key-pests in the Mediterranean, in order to increase the quality and quantity of available fruit to local consumers at lower prices. Currently, alternative methods for covering spray broad spectrum insecticide, such as proteinaceous liquid attractants or mass trapping with food-based or synthetic attractant or bio insecticides, are still underdeveloped because of high monitoring and application costs. The project addresses:

- Reduction of the effects of different sources of pollution at the level of urban, industrial, and agricultural areas.
- Support for adaptation strategies to increase ecosystem resilience to climate change and reduce risk of loss of ecosystem values and services.
- Plans to substitute cover spray broad spectrum insecticides with novel information and communication technologies.

In the above framework, early detection and warning of invasive species of low population density into the region is essential for the initiation of immediate actions aimed at eradicating the insects from the invasive areas. The innovation is regarded as process oriented as it aims to replace currently used methods and processes of monitoring and managing pests. It adequately stresses on its innovative approach to combat pests by reducing the lag time component between the collection of data, their transmission process and final action and by focalizing the chemical treatment just to the bait zone on the tree.

To this end, **FruitFlyNet** project will provide the solution for the farmers as it provides them with a precision pest management control system, for local communities as they will be warned upon the early detection of a pest, for consumers as they will consume healthier





food without any pesticide residues, for environmentalists as they will have an effective tool to monitor and manage pests.

## 3.2 Overall objective

**FruitFlyNet** project's overall objective is to contribute to the development and implementation of environmentally effective e-monitoring and ground spraying control solutions based on prototypes, technological innovations and knowledge transfer for specific key-pests in the Mediterranean, in order to increase the quality and quantity of available fruit to local consumers at lower prices.

## 3.3 Specific objective

**FruitFlyNet** project's specific objective is to develop, implement, test and demonstrate an innovative, integrated, Location Aware System (LAS) for fruit fly ground spraying control, by means of four pilots in five Med-countries aimed at developing prototypes, technological innovations and knowledge transfer. LAS will be based on Real Time Trapping and Insect Counting (ReTIC) that can rationalize the use of insecticides: more accurate info in less time will be available to the farmers in order to decide how to intervene just only on the identified attacked areas of the tree. This will contribute to reduce the polluting risk factors for the environment.

## 3.4 Main expected results

1. An operational pilot in each one of the five Med-countries. Prototyping **FruitFlyNet** solutions in representative application scenarios applied for four key-pests.
2. An e-monitoring system, integrated with a Real-time Trapping and Insect Counting (ReTIC) module to estimate insect populations and support countering measures selection and alarm spraying levels.
3. A control system to harmonize management strategies for the examined key-pests.
4. Propose a unified WMSN reference model.
5. Achieving self-sufficiency by increasing the quality and quantity of fruits available to local consumers at lower prices.  
Technological transfer/dissemination.



### 3.5 Target Groups

- Farmers, growers, landowners.
- SMEs, Cooperative Unions.
- Citizens and local communities living near spraying areas.
- Phytosanitary inspectors.
- Spraying operators.

### 3.6 Final Beneficiaries

- Pest-control operational industry.
- National-International organizations dealing with the supervision of Tephritid control and their geographic expansion.
- Agricultural, Environmental Protection.
- UN Food Institutes/Organisations.

[Attached file: Table 4, Attached file no. 12](#) (“Project\_summary.pdf”).

## 4. Strategy of the Work Plan

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### 4.1 Action Workplan

Driven by rapidly changing requirements and business needs, IT systems and applications are undergoing a paradigm shift: components are replaced by services, distributed over the network, composed and reconfigured dynamically in a demand-driven way into service-oriented architectures. Exposing services in future network infrastructures entails a wide range issues. The **FruitFlyNet** project has eight WPs which can be subdivided into five (5) main technical parts (WP4 to WP8) and three (3) less technical parts (WP1 to WP3) devoted in the general framework of project management. The dependencies (and input–output relations) between the work packages are depicted in the Communications Management Plan.



Each one of the eight (8) packages comprises of a number of activities as follows:

1. **WP1: Project Management.** This package describes the co-ordination of the project in administrative and technical terms. It aims to achieve smooth and effective operation of the project and timely delivery of the results. It includes two tasks: Project Co-ordination and Administrative Management, Quality Assurance and Evaluation.
2. **WP2: Communication.** WP2 guarantees maximum visibility and public awareness of the project by following a sound publication strategy. It includes four activities: Project Presentation, Realisation and update of the *FruitFlyNet's* portal, Knowledge dissemination and finally Project results dissemination.
3. **WP3: Capitalization of the results.** It describes activities focusing on the interaction between the project results and their effective use. It includes two tasks: Final evaluation of the *FruitFlyNet* prototypes, and capitalization of the results.
4. **WP4: Architecture.** The fourth work package provides the physical problem analysis, the scenario space analysis and identifies the architectural characteristics of the WMSNs to be deployed. It includes four tasks: User Analysis by means of the physical problem definition, the Scenarios Definition and Requirements Specification, the Warning System Design Architecture for Invasive Species, and finally the Architecture Specification.
5. **WP5: Networking–Middleware.** WP5 is responsible for the deployment of the WMSN reference architecture. It will also develop the middleware for building the appropriate LA services. It includes five tasks: Development of a Geographical Database, Network Routing, Self-organization and Self-repair User Interface, Geospatial Data Delivery, Ground Spray Treatment Optimization and WMSNs Deployment, Management and Operation.
6. **WP6: ReTIC System.** WP6 aims at designing and developing a Real-time Trapping and Insect Counting (ReTIC) system for e-monitoring invasive fruit flies and other important pest population. The image sensor may follow a policy of regularly timed image acquisitions, to account for moving or static insects into the trap. The WP has 4 tasks: Indoor and Outdoor Semi-field Sensory Image Interpretation, Development



of a Species-specific Module, Open Field, Species-specific ReTIC Test, Development, and Process Optimization and DS.

7. **WP7: Integration–Operation.** The reference WSMN architecture will be tested for three species and two spatial–cultivation levels (large Vs. small orchards) and for at least one invasive species. Field sites will be established in each one of the five participating countries. The WP includes two tasks: Implementation and Operation of the *FruitFlyNet* Prototype and Ground Spraying Pilot Demonstration.
8. **WP8: Performance Assessment.** The final work package aims in the assurance of high quality information gathered by the WSMNs, the verification and validation and in the final evaluation of FruitFlyNet’s prototype in order to apply good farming practices. It includes three tasks: Assurance of Data Quality and Verification and Validation of the *FruitFlyNet* prototype.

Finally, there are four (4) Milestones showing the consistence of the *FruitFlyNet* in relation to the specific objective/expected results:

1. **M1 WMSNs Deployment** (10m, Deployment): Propose a unified WMSN reference model.
2. **M2 Completion of ReTIC** (12m, Module): An e-monitoring system, integrated with a Real-time Trapping and Insect Counting (ReTIC) module to estimate insect populations, support countering measures selection and alarm spraying levels.
3. **M3 Integrated FruitFlyNet Prototype** (15m, Deployment): The control system to harmonize management strategies for the effective control of the examined key-species in the Mediterranean basin and implement a remote decision-making monitoring network.
4. **M4 Operational FruitFlyNet Prototype** (22m, System in operation): An operational pilot in each one of the five (5) Med-countries. Prototype *FruitFlyNet*’s solutions in representative application scenarios applied for four key-pests. It also includes Demos of *FruitFlyNet* Prototype (21m, Demo).

## 5. Project Presentation Slides

The following set of slides provide a quick presentation of the project, which has been given already at a number of meetings, and in particular, at the 1<sup>st</sup> Workshop on:

“Location Aware Systems for Fruit Fly Monitoring and Pest Management Control”

(<http://fruitflynet.aua.gr>)

The Workshop was hosted by AUA (Beneficiary) in Athens on January 10<sup>th</sup>, 2014, in conjunction with the kick-off meeting of the **FruitFlyNet** project.

Attached file: **Table 4, Attached file no. 6** (“Presentation: T.Tsiligridis”).

## 6. Project Presentation Posters

The attached two (2) posters have been displayed at the 1<sup>st</sup> Workshop on:

“Location Aware Systems for Fruit Fly Monitoring and Pest Management Control”

(<http://fruitflynet.aua.gr>)

The Workshop was hosted by AUA (Beneficiary) in Athens on January 10<sup>th</sup>, 2014, in conjunction with the kick-off meeting of the **FruitFlyNet** project.

Attached files: **Table 4, Attached files no. 7,8** (“FruitFlyNet\_Workshop-1\_10.01.2014.pdf”, “FruitFlyNet\_Workshop-2\_10.01.2014.pdf”).



Figure 1: Project Presentation Poster displayed at the 1<sup>st</sup> Workshop



## 7. Project Presentation Workshop

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On Friday, January 10<sup>th</sup>, 2014, the 1<sup>st</sup> Workshop on:

“Location Aware Systems for Fruit Fly Monitoring and Pest Management Control”

(<http://fruitflynet.aua.gr>)

The Workshop was hosted by AUA (Beneficiary) in Athens on January 10<sup>th</sup>, 2014, in conjunction with the kick-off meeting of the **FruitFlyNet** project.

Attached files: **Table 4, Attached files no. 1-11.**

Main e-press releases (in Greek):

- <http://www.agrotypos.gr/index.asp?mod=articles&id=83814>
- <http://gisnews.gr/tag/fruitflynet/>
- <http://www.palo.gr/search/?kwd=FRUITFLYNET>
- <http://www.tastv.gr/node/7317>
- [http://cebil.gr/a/2536680/georgia\\_akrubeias\\_gia\\_tin\\_antimetopisi\\_ton\\_entomologikon\\_prosbolon\\_sta\\_dendra](http://cebil.gr/a/2536680/georgia_akrubeias_gia_tin_antimetopisi_ton_entomologikon_prosbolon_sta_dendra)
- [http://www.entsoc.gr/site/index.php?option=com\\_content&view=article&id=63:fruitflynet&catid=11:news-greek&Itemid=227&lang=el](http://www.entsoc.gr/site/index.php?option=com_content&view=article&id=63:fruitflynet&catid=11:news-greek&Itemid=227&lang=el)
- [https://www.facebook.com/permalink.php?id=270029279684365&story\\_fbid=700006150020007](https://www.facebook.com/permalink.php?id=270029279684365&story_fbid=700006150020007)
- <http://cnf-labs.org/pdf/a-system-for-fruit-fly-monitoring-and-pest-management.html>
- <https://groups.google.com/forum/#!topic/peegep/pCw6ihmRdpU>



## 8. Project Portal

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The URL of the project is <http://fruitflynet.aua.gr>. The portal includes a public area as well as an area to which access is restricted to authorized users. The public area contains general information about the project, links to the project partners and the researchers working in the different sites, news about the project, and events organized by the project partners, the public documents that have been generated by the project (publications and public deliverables) and a page of links to related projects or events.

The restricted area contains the confidential information and material that is intended for communication between the project partners (who also exchange information and material by means of an appropriate repository) and between the project partners and the European Commission.

## Appendix

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	Attached file	Name of attachment
1.	Kick-off/Workshop Agenda	<a href="#">FruitFlyNet_kickoff.workshop_Agenda.pdf</a>
2.	Presentation: G.Papadakis	<a href="#">AUA.Short.Presentation.pdf</a>
3.	Presentation: D.Nestel	<a href="#">Nestel.ChemicalControl.FruitFlyNet.pdf</a>
4.	Presentation: N.Papadopoulos	<a href="#">Papadopoulos.Invasive.FruitFlyNet.pdf</a>
5.	Presentation: C.Pontikakos	<a href="#">Pontikakos.Rhynchophorus.FruitFlyNet.pdf</a>
6.	Presentation: T.Tsiligiridis	<a href="#">Tsiligiridis.ProjectPresentation.FruitFlyNet.pdf</a>
7.	Brochure 1	<a href="#">FruitFlyNet_Workshop-1_10.01.2014.pdf</a>
8.	Brochure 2	<a href="#">FruitFlyNet_Workshop-2_10.01.2014.pdf</a>
9.	List of Participants	<a href="#">Workshop.List.Of.Participants</a>
10.	Photo gallery	In the portal
11.	Videos	In the portal
12.	Project Summary	<a href="#">Project_Summary.pdf</a>

**Table 2: Document's attached files**