Space Wireless sensor networks for Planetary Exploration

Fact Sheet

Project Information

<table>
<thead>
<tr>
<th>SWIPE</th>
<th>Funded under FP7-SPACE</th>
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<tr>
<td>Grant agreement ID: 312826</td>
<td>Overall budget € 2 056 245,36</td>
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<td>Status</td>
<td>EU contribution € 1 495 852</td>
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<td>Closed project</td>
<td>Coordinated by TEKEVER TECNOLOGIAS DE INFORMACAO SA</td>
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<td>Start date 1 April 2013</td>
<td>Portugal</td>
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<td>End date 31 October 2015</td>
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Objective

SWIPE intends to bring Wireless Sensor Networks based on MANET terrestrial technology to space. In order to prepare for manned missions to other planets, it is necessary to monitor permanently the surface environment and have a clear notion of its conditions. Hundreds or thousands of small wireless sensors could be dropped from a satellite orbiting the planet onto the surface to assure a uniform and sufficient coverage. These autonomous sensors would then create their own ad hoc network while some of them, equipped with satellite communication capabilities, would establish a link between the WSN and the satellite. Data gathered from the sensors would be processed and sent to the satellite and later to Earth. SWIPE will define this mission scenario in detail, as well as mission and system requirements, and will also perform system level design of the three different communication segments involved: within the sensor network, between the sensor network and the relay satellite and between the satellite and Earth. However, SWIPE’s main goal is to design and develop three fully functional node prototypes, focused on two main areas,
communications and the sensors themselves, together with simple power and control units. Three prototypes are needed to validate the ad hoc networking concept. The whole system will be evaluated in laboratory and in a field test on planetary surface analogue (e.g. Svalbard in Norway), which will be chosen according to the mission scenario.

SWIPE’s philosophy relies on terrestrial technology. The communications concept for instance is based on a terrestrial networking technology, not yet validated in space. The hardware communications platform will be based on Software-Defined Radio, another promising terrestrial technology already deserving the attention of the major space players.

Field of science

/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/satellite technology
/engineering and technology/electrical engineering, electronic engineering, information engineering/information engineering/telecommunications/wireless
/natural sciences/physical sciences/astronomy/planetary science/planets

Programme(s)

Topic(s)

Call for proposal

FP7-SPACE-2012-1

Funding Scheme

CP-FP - Small or medium-scale focused research project

Coordinator

TEKEVER TECNOLOGIAS DE INFORMACAO SA

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Rua Da Leziria 1
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Portugal

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

EU contribution
€ 433 662

Website
Contact the organisation
Participants (4)

**ARQUIMEA INGENIERIA SL**

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Contact the organisation

**AIRBUS DEFENCE AND SPACE SAS**

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CONSORZIO PER LA RICERCA NELL' AUTOMATICA E NELLE TELECOMUNICAZIONI C.R.A.T.

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€ 239 511

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Activity type
Research Organisations

Administrative Contact
Sabrina Giampaletti (Ms.)

Last update: 1 August 2019
Record number: 108074

Permalink: https://cordis.europa.eu/project/id/312826/

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