# High speed, high frequency electro-Photonic Adc for Space Enabled Routers

## Fact Sheet

### Project Information

<table>
<thead>
<tr>
<th>PHASER</th>
<th>Funded under</th>
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<tbody>
<tr>
<td>Grant agreement ID: 607087</td>
<td>FP7-SPACE</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Status</th>
<th>Overall budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed project</td>
<td>€ 3 411 162</td>
</tr>
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<table>
<thead>
<tr>
<th>Start date</th>
<th>End date</th>
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<tbody>
<tr>
<td>1 October 2013</td>
<td>30 September 2016</td>
</tr>
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<tr>
<th>Coordinated by</th>
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<tbody>
<tr>
<td>THALES ALENIA SPACE</td>
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<tr>
<td>ESPANA, SA</td>
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<tr>
<td>Spain</td>
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## Objective

The vision behind the PHASER project is to provide the European Space Industry with a new Analog to Digital conversion system that allows the direct digitalization of typical RF signals from K up to Ka band. PHASER will develop a space-grade, high speed digitizer capable of direct RF-sampling up to Ka band signals, exhibiting an improvement of more than two order of magnitude in the digitizer frequency response respect to the SoA, which enables a dramatic hardware complexity reduction for the next generation satellite payloads, as preliminary assessed in an ESA research program where the fundamental concept was already demonstrated by the consortium. The High speed, high frequency Electro-Photonic ADC system capable of down-converting and digitalize a high frequency band pass signal will be composed by a high speed optical sub-sampling architecture as a key element, capable of working in a very wide range of frequencies (from few kHz up to tens of
GHz) and down-converting high bandwidth signals without electronic mixing hardware or intermediate frequency stages. After this signal down-conversion, the system will use a suitable electrical ADC to digitalize the signal. PHASER system will be able to be integrated in any medium or large satellite platform in order to provide the different system designers with one of the key elements necessary to arrive to the so called “Digital Defined Satellite”. Having a Digital Defined Satellite means that all the possible evolutions in customers’ needs can be covered by the suitable reprogramming of the on board signal processing elements, thus extending the useful satellite lifetime over 25 years increasing in a proportional way the satellite profitability.

Field of science

/ engineering and technology/electrical engineering, electronic engineering, information engineering/electronic engineering/signal processing

Programme(s)

Topic(s)

Call for proposal

FP7-SPACE-2013-1

Funding Scheme

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

Coordinator

THALES ALENIA SPACE ESPANA, SA

<table>
<thead>
<tr>
<th>Activity type</th>
<th>EU contribution</th>
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<tbody>
<tr>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td>€ 581 352</td>
</tr>
</tbody>
</table>

Address

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Spain

Contact the organisation

Administrative Contact
Participants (4)

DAS PHOTONICS SL
Spain
EU contribution
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Activity type
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ONEFIVE GMBH
Switzerland
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Activity type
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Contact the organisation
Administrative Contact
Gabriel Spuehler (Dr)

CSEM CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DEVELOPPEMENT
Switzerland
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Activity type
Research Organisations
Website
Contact the organisation
THALES ALENIA SPACE FRANCE SAS
France
EU contribution
€ 184 776

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

Website
Contact the organisation

Administrative Contact
Steve Lecomte (Dr)

Administrative Contact
Michel Maignan (Mr)

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Permalink: https://cordis.europa.eu/project/id/607087

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