

 Content archived on 2024-05-29

Smart sensor systems design

Fact Sheet

Project Information

SMARTSES

Grant agreement ID: 23991

Project closed

Start date

1 July 2006

End date

30 June 2009

Funded under

Human resources and Mobility in the specific programme for research, technological development and demonstration "Structuring the European Research Area" under the Sixth Framework Programme 2002-2006

Total cost

No data

EU contribution

€ 410 916,00

Coordinated by

TECHNICAL UNIVERSITY OF CATALONIA (UNIVERSITAT POLITECNICA DE CATALUNYA)

 Spain

Objective

In this project new techniques will be developed that will place electronics at the sensor itself, on the same piece of silicon, and accurately report back the actual signal value.

This multidisciplinary research will focus on programmable parameter-to-frequency

(time) converters as a smart sensor core and structural-algorithmic methods for data extraction in order to move from a traditional analogue signal domain to frequency-time signal domain (frequency, period, duty-cycle, time interval, phase-shift, etc.). Working in the frequency-time domain simplifies design, and obviates some technical and technological problems, thanks to the properties of frequency as informative parameter. Such design solution becomes particularly important when large arrays of sensors need to be monitored.

Because this solution is fully compatible with system-on-chip implementation, it can help in overcoming current hurdles to truly widespread deployment of smart sensors and systems. The advanced methods for signal processing and conversion to be developed will become the basis for self-adaptive smart sensors and systems with programmable accuracy and non-redundant measuring time, applicable to all kind of modulating sensors (resistive, capacitive, inductive), resonant sensors and oscillator-based sensors.

The novelty of this work and the potential impact of the expected results will ensure its presence in major scientific events in this area in the coming years. Training students in these topics will contribute to disseminate this design method and supervising Ph. D. students will ensure a continuous flow of enriching ideas for sustained progress.

Fields of science (EuroSciVoc)

[natural sciences](#) > [biological sciences](#) > **[biochemistry](#)**

[engineering and technology](#) > [electrical engineering](#), [electronic engineering](#), [information engineering](#) > [electronic engineering](#) > **[analogue electronics](#)**

[engineering and technology](#) > [electrical engineering](#), [electronic engineering](#), [information engineering](#) > [electronic engineering](#) > **[signal processing](#)**

[social sciences](#) > [political sciences](#) > [political transitions](#) > **[revolutions](#)**

[engineering and technology](#) > [electrical engineering](#), [electronic engineering](#), [information engineering](#) > [electronic engineering](#) > [sensors](#) > **[smart sensors](#)**



Keywords

MEMS

data acquisition systems

digital sensors

duty-cycle

frequency-to-digital converters

period

phase-shift

quantization error

sensor systems

smart sensors

system-on-chip

time interval

Programme(s)

[FP6-MOBILITY - Human resources and Mobility in the specific programme for research, technological development and demonstration "Structuring the European Research Area" under the Sixth Framework Programme 2002-2006](#)

Topic(s)

[MOBILITY-3.3 - Marie Curie Chairs \(EXC\)](#)

Call for proposal

FP6-2004-MOBILITY-10

[See other projects for this call](#)

Funding Scheme

[EXC - Marie Curie actions-Chairs](#)

Coordinator



TECHNICAL UNIVERSITY OF CATALONIA (UNIVERSITAT POLITECNICA DE CATALUNYA)

EU contribution

No data

Total cost

No data

Address

**Jordi Girona, 31
BARCELONA**

Links

[Contact the organisation](#)  [Website](#) 

[HORIZON collaboration network](#) 

Last update: 6 March 2009

Permalink: <https://cordis.europa.eu/project/id/23991>

European Union, 2025