

## **NABAB**

### **NANocomputing Building blocks with Acquired Behaviour**

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Targeting the development of computing solutions complementing logic functions based on CMOS, the main objective of the NABAB project consists of "demonstrating that it is possible to obtain useful computing functions as the result of a post-fabrication learning/adaptation process taking advantage of the rich functionality provided by interconnected nano devices".

The NABAB project will explore the feasibility of a functional nano computing block (NAB) that will be built by interconnecting devices based on new nanoscale organic field-effect transistors (FET), functionalised nanotubes FET or ZnO FET that provide a rich combination of functions (memory and gain, sensitivity to various local or global stimuli).

The project will show, as a primarily target, that such a NAB can acquire a specific, non-trivial, computing function by means of an internal adaptation process (learning, reconfiguration, self-organization). Besides, an important aspect of the project is to show that the acquired functionality of the NAB is exploitable within a realistic and larger computing system. To this extent an appropriate scheme for electrical and logical interfaces will be devised so as to make the function available at higher levels and relevant to realistic application concerns. Indeed competing advantages are sought on the one hand for reasons such as enabling the use of high parameter variability technologies, on the other hand for reasons such as providing novel functionalities (i.e. associative memory, classifiers) complementing classical logic functions.

In order to achieve the ambitious objectives of the NABAB project, the consortium involves 5 complementary research organisations with the necessary excellence in domains like nano and molecular electronics devices, computing architecture, neural networks and analogue design.

<b>Beneficiary N°</b>	<b>Beneficiary name</b>	<b>Beneficiary short name</b>	<b>Country</b>
<b>1</b> ( <b>coordinator</b> )	Commissariat à l'Energie Atomique	CEA	<b>F</b>
<b>2</b>	Centre National de la Recherche Scientifique - IEMN	CNRS	<b>F</b>
<b>3</b>	Chalmers University of Technology	CHALMERS	<b>S</b>
<b>4</b>	Consejo Superior de Investigaciones Cientificas – CNM - IMSE	CSIC	<b>E</b>
<b>5</b>	University of Cambridge	UCAM-DENG	<b>UK</b>