

start: 2015, end: 2018

# e-BaCCuSS

**event-Based Control, Circuits and ProceSSing towards Ultra-Low Power Consumption**

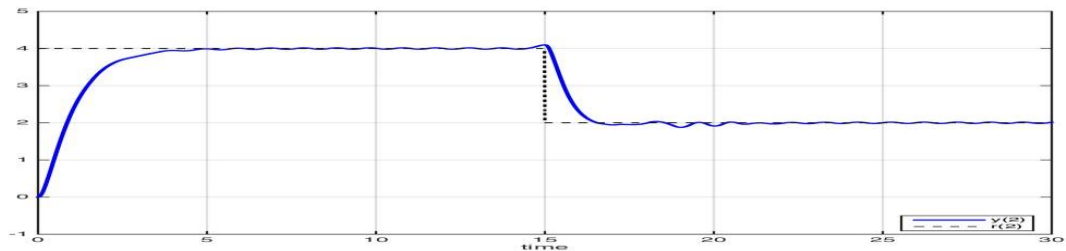
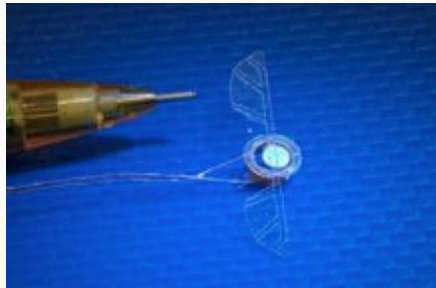
*Mitigating the data-deluge by an adequate sampling*

## Coordinators:

GIPSA-lab: Christophe Prieur  
 INRIA: Bernard Brogliato  
 LJK: Brigitte Bidegaray-Fesquet  
 TIMA: Laurent Fesquet

## People:

CEA: Suzanne Lesecq, Gilles Sicard  
 GIPSA-lab: Laurent Condat, Nicolas Marchand, Nacim Meslem  
 INRIA: Alexandre Vieira  
 LJK: Frédérique Leblanc, Fairouz Zobiri  
 TIMA: Amani Darwish, Jean Simatic



## Dissemination:

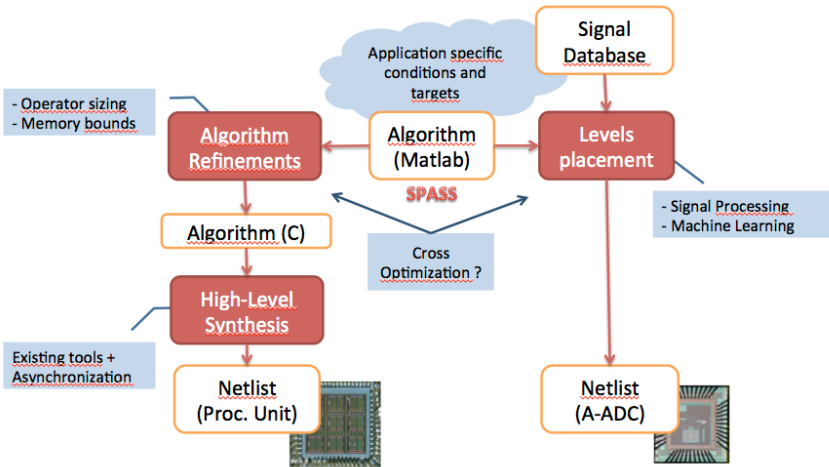
1 journal article, 3 keynote speeches, 26 conferences, 1 book chapter,

**Wide implication in the international Event-Based Control, Communication, and Signal Processing community** (3 program chairs, Special session chairs, TPC members, ...)

## e-BaCCuSS: selected results

### ALPS: automated design flow for event-based systems:

- Evaluation by simulation of the system
- Generation of an application dedicated ADC
- Synthesis (HLS) of an event based circuit

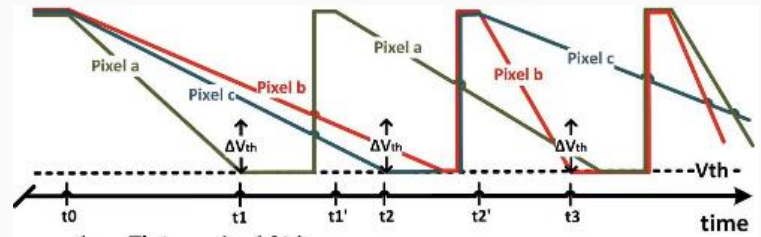


### High-performance power converters:

Optimal control for DC-CD converters, such as Buck or Cuk converters

### Event-based image sensors:

- Original architecture based on specific sampling and reading techniques
- Event-based low-power image sensor without ADC
- Design of a testchip in AMS 350 nm technology



### Event-based control:

- Set-point tracking using a state-feedback controller
- Integral control for set-point tracking
- Stabilization using exponentially decaying Thresholds