

# MIMOSA : Multi-sensor navigation platform

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## M3 SYSTEMS

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MPSOC – MIMOSA Project

# Context

A GNSS/SLAM platform is developed in the frame of a National projet co-financed by DGCIS (MIMOSA BGLE).

This development is also conducted in the frame of common laboratory between M3 Systems and CEA LIST.

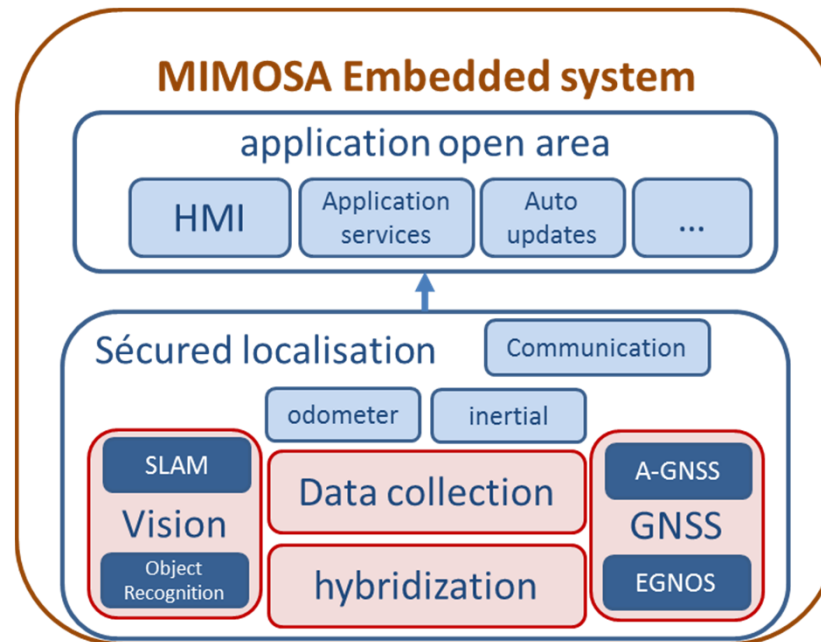


*A prototype integrating GNSS signal processing ( GPS, GALILEO) and SLAM (visual odometry based on single camera) will be available for demonstration in Septembre 2014*



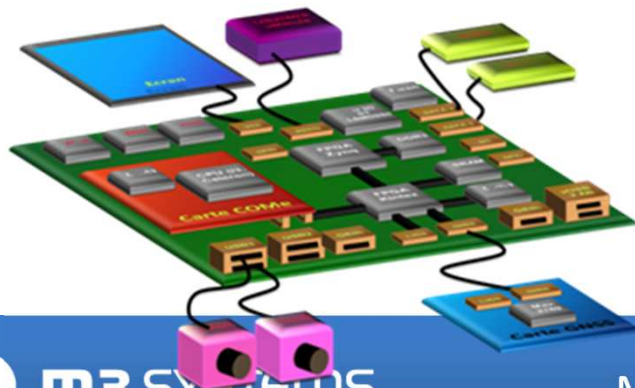
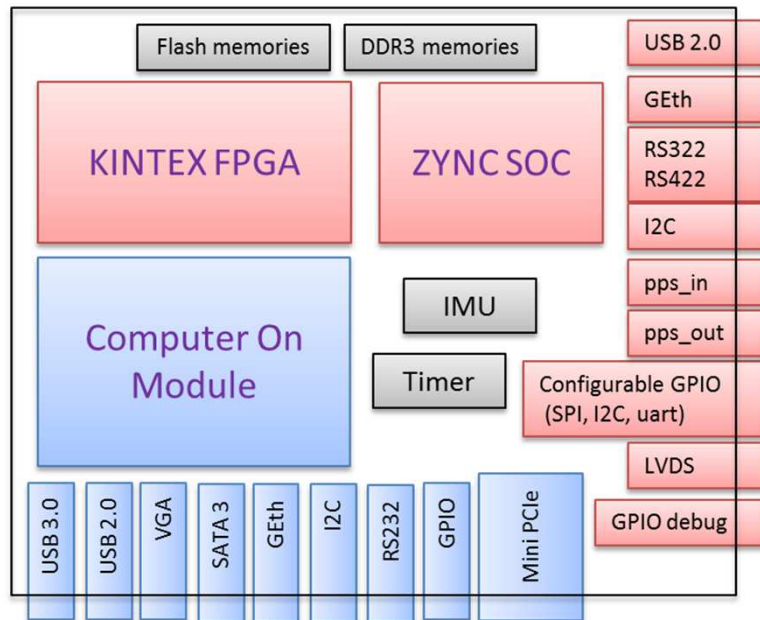
# Applications

The objective is to integrate on a « real time on-board architecture » the GNSS signal processing , the SLAM image processing and hybridization algorithms ( GNSS, vision , IMU,..) in order to achieve robust and accurate positioning in constrained environment (ex : urban area)



A given MIMOSA platform configuration is composed with one or several basic-boards

### MIMOSA basic-board



### Hardware Resources :

ZYNQ SOC (XILINX)

KINTEX FPGA (XILINX)

COMPUTER ON MODULE (KONTRON)

Intel® Core™ i3/ Celeron

Chipset Intel® Mobile QM77/HM76

Graphics Controller Intel® HD Graphics 4000

Main Memory :Up to 2x8GB DDR3

Operating system : M3S custom linux distribution

IMU sensor

Timer module

### High-Speed interfaces :

PCIe Gen2 & Mini-PCIe

Gigabit Ethernet

USB3.0 & USB2.0

SATA3.0

LVDS

### Wireless interfaces :

Wifi, Bluetooth

GPRS/3G

### Low-Speed interfaces :

RS-232 & RS-422

SPI & I2C

Configurable GPIOs

PPS-in, PPS-out

# Generic board

## Board Dimensions :

6U Europe form factor (16x23cm)

## FPGA:

- Multiconstellation GNSS receiver
- Image processing accelerator

## SOFTWARE

- Sensors acquisition & datation
- Sensors Hybridization & position calculation



# Demonstrator ( sept 2014)



**Generic boards**



**Demonstrator platform**



**Application demonstrator**

# Next steps

Industrialisation of :

- **FPGA board**
- **GNSS IP**
- **SLAM IP**
- **Hybridization algorithms**

**Full scale application**



Thank you for your attention



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