

H-INCEPTION

Heterogeneous INCEPTION - CA 701

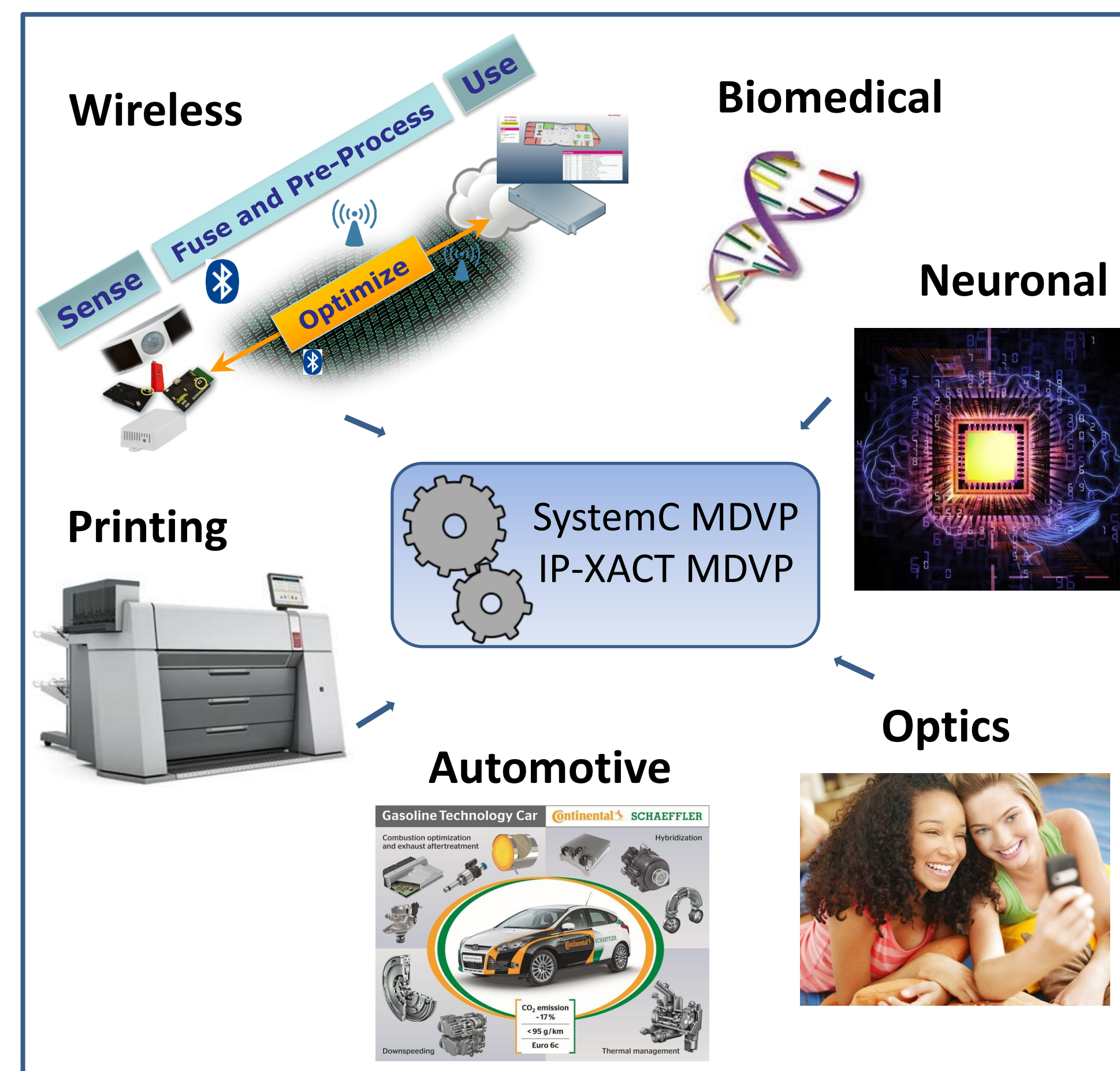
General description

New types of emerging applications require microelectronics which closely interact with the surrounding environment in different physical domains (optical, mechanical, acoustical, biological, etc.).

The main challenge is to correctly specify, dimension and verify these multi-domain microelectronics assisted systems, to avoid errors and redesigns which hamper product quality and thus time to market.

H-INCEPTION addresses the system level design needs of heterogeneous applications with the development of tools and a unified design methodology for **M**ulti **D**omain **V**irtual **P**rototyping.

A rich consortium from 5 countries composed of semiconductor and fabless companies, EDA vendors, research institutes and universities, specifies and validates the development of tools and methodology through 7 applications from various domains such as automotive, wireless, neuronal, printing and biomedical.



Goals / Objectives

- Key-technological developments
 - SystemC MDVP**
SystemC extensions development & standardization.
 - IEEE1685 IP-XACT MDVP**
Extensions, standardization of XML based documentation for hardware platforms
 - New Models of Computation**
SPH, Bond Graph...
 - Unified framework**
Eclipse-based development environment for MDVP
- Deployment in European industry.

Societal impact / Results

Virtual prototyping for heterogeneous applications is key to improving the specification of each physical part composing the system and to develop in advance the embedded software. As a consequence, development costs and number of prototypes will decrease and opportunities for extended architecture exploration will increase. It means :

- Using less resources for their realization
- Improving product quality
 - Automotive**
Improving performance with a best Bill of Material to fulfill emissions requirements (pollutants + CO2) and other regulations (OBD, ISO26262).
 - Biomedical**
Decreasing cost of biomedical products
- Reducing time-to-market, increasing competitiveness
- Creating jobs in EDA service & support

Partners



Associated partner



Countries involved

- FRANCE
- SPAIN
- NETHERLANDS
- SWITZERLAND
- GERMANY

Additional information

The project will end on December 31th 2015.

Looking ahead

Integration	30 M Tr	1 G Tr	5 G Tr	?	?
Levels					
Multi Domains					needs for incoming years
Application					NEMS
System					Multi Domains interaction
Sub Systems					Global System Power analysis
SW for IP's					Automatic Car Driver
HW IP's					Environment modeling
AMS					Robotics
RF IP's					Integration on other than SI supports
Time	2000	2005	2010	2015	2020

Abstraction Level (indicated by an arrow pointing from bottom-left to top-right)

2008 - 2011 Beyond DREAMS
SystemC AMS + TLM Platforms
SW + RF + AMS

2012 - 2015 H-INCEPTION
SystemC AMS MDVP Multi Domains
SW + RF + AMS + MEMS + Bio chips
Cyber Physical Systems

2008 - 2011
IEEE 1686 SystemC
SW + HW

2009
SystemC TLM
SW + HW

2009
MEMS
FEM simulators / No SW

2000
IEEE 1076.1 VHDL-AMS
AMS chips
RF chips
No SW



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