



Secretaría
de Innovación, Ciencia
y Educación Superior



**Primer Encuentro de Creatividad e Innovación para la
Internacionalización en Casa**
Convocatoria 2017

ATTACHMENT 2

Problems to be considered in the development of the projects for the *First Innovation and Creativity Meeting for the Internationalization at Home*

Automotive Sector

Section I:

Design, Engineering and Manufacture	
Design and product improvement	Production Line Layout design
Machinery Maintenance	Mechatronics and Automation
Production Control Chart	Analysis of nonconformities
Supply Chain	Advice for the acquisition of machinery
Technologic Surveillance: Technological research and Technologic investment counselling.	
Quality Management Systems	
Tracing and Training	

Sustainability	
Energy Efficiency	Waste Management
Process Improvement	
Implementation of projects of continuous improvement	Process Reengineering
Supplier management and development	

Section II

Subject	Advanced Propulsion Technologies	Alternative Propulsion Technologies	Technologies for life cycle analysis
Embedded Systems	Software Design for Emission Control		System Updates in real time
Industrial Robotics		Low weight and low price systems.	
Sensor Design and Fabrication	Smart Sensors	Storage, distribution and use of H2	Software and life cycle control for design of residual life diagnostic technologies
	Catalytic converters and particle traps		
Artificial Intelligence and Neural networks			Online Update Automation
Other applicable Technologies	Lightening	Advanced Batteries	Recycling, Reuse, Revaluation
	High temperatures	Fuel Cells	Biodegradable Materials
	Friction Reduction		

Agro Sector

Subject	Traceability	Process Control and Monitoring	Resource Management
Embedded Systems	<p>Sensor fusion algorithms and data analysis for the development of intelligent systems in unstructured environments</p> <p>“Remote Sensing”</p>	<p>Temperature control, relative humidity, lighting, ventilation, energy consumption, access, etc.</p> <p>Management Systems of machinery through PDA's (personal digital assistants)</p>	<p>Precision agriculture (use of embedded systems and data analysis to adjust the use of inputs)</p> <p>3R technologies (RS, GIS and GPS) to increase operating comfort, planting accuracy and real-time monitoring</p>
Industrial Robotics	<p>Agricultural robots (involves the standardization of terms, measures and methodologies of system performance and adequacy of technological requirements)</p>	<p>Control of machines, processes and vehicle guidance (autonomous or semi-autonomous tractors)</p> <p>Autonomous or human robot equipment</p> <p>Devices for the precise analysis of the soil in a short period of time</p>	<p>Self-contained vehicles to collect local information on soil moisture and compaction, leaf area and temperature, climate, insect presence</p>
Internet of things	<p>“Cloud Computing” platforms, for the automatic control of the traceability</p> <p>Geographic Information Systems (GIS)</p>	<p>Mobile applications that provide information such as tips on planting, storage and collection, pest control</p> <p>Applications with Big Data to schedule crops in specific areas</p>	<p>Self-propelled tractors (presented by the firm (CNH Industrial))</p>
Sensor Design and Fabrication	<p>Computer vision (robotic harvest, detection and location)</p> <p>Chemical recognition systems</p>	<p>Sensors for the monitoring of physical properties of the soil</p>	<p>Wireless sensor networks communicated to local and remote users via wireless telephony and the Internet (weather information synchronization, flood prediction, water level,</p>

	Electronic Identification (SDI) (transponders and transceivers)	Real-time animal monitoring with "smart" sensors (physiological parameters for milking control, feeding, health care, pups care, among others) real time with "intelligent" sensors (physiological parameters for milking control, feeding, health care, care of the pups, among others)	frost monitoring on farms, moisture distribution time detection, etc.)
	Digital biometric sensors (nasal print, retina and iris images and DNA fingerprint)		

Chemical Sector

	Cosmetics Industry	Plastics Industry
Embedded Systems	Control and monitoring systems and programmable automation controllers can support the most complex real-time monitoring and control tasks in the manufacture of cosmetic products.	Units with memory management that are designed to perform unit performance tests.
		Emulation of the behavior and properties of plastic materials.
Industrial Robotics	Increase of flexibility and productivity of production lines.	Verify requirements for approval (quality, health and standards).
	Placement of the pieces until the packaging and labeling.	Packaging process (packaging lines with reduced surfaces). Improvement in speed and efficiency of production.
Internet of things	<ul style="list-style-type: none"> • Connection of intelligent sensors, devices and equipment to the network. • Digitalize the company, making the operations of the industry more efficient while complying with the basic operational functions. • The combination of networks, devices and software allows interaction from anywhere 	
Sensor Design and Fabrication	Record the physical conditions and transmit electronic signals during the production process (measurement of temperature, pressure, humidity, etc.)	Control and monitoring systems and programmable automation controllers can support the most complex real-time monitoring and control tasks.
	Detection of shapes, colors and surface differences.	Position Measurement (distance, displacement)

Microcontroller Manufacture	It mainly covers digital power conversion needs in inverters and uninterruptible power supplies.	Improved memory controllers that verify requirements for approval (quality, health and standards).
	Improvement in production efficiency and speed.	Packaging process (packaging lines with reduced surfaces).
Design and manufacture of simulators	Process simulation software of continuous process operation, to adjust daily production and take into account external variables such as demand, raw material prices.	Intelligent 3D / Virtual Reality generation for the design and operation of flexible manufacturing discontinuous plants to establish efficient design and operation conditions
	Programming and software of reverse engineering or retro-synthesis.	
Artificial Intelligence and Neural networks	Classification of raw materials and products within the production line	Qualitative interpretation of process data, adaptive control, detection of sensor failures.
	Recognition of patterns and analysis of chemical composition.	Process units optimization.
	Intelligent control systems for the verification of all the containers in production process	Automatic revision systems in the parts manufacturing line

Notes:

If the problems stated in Attachment 2 are not of your interest, you may propose other subject that you consider more adequate to your lines of research.

The problems have been provided by the Secretariat of Sustainable Economic Development. If you want more information about any of them, let us know by email to establish a direct contact with them.