

“EU programs-An excellent path for the industry-academy partnership

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Bucharest
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Honeywell

Honeywell Research Organization

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Aerospace



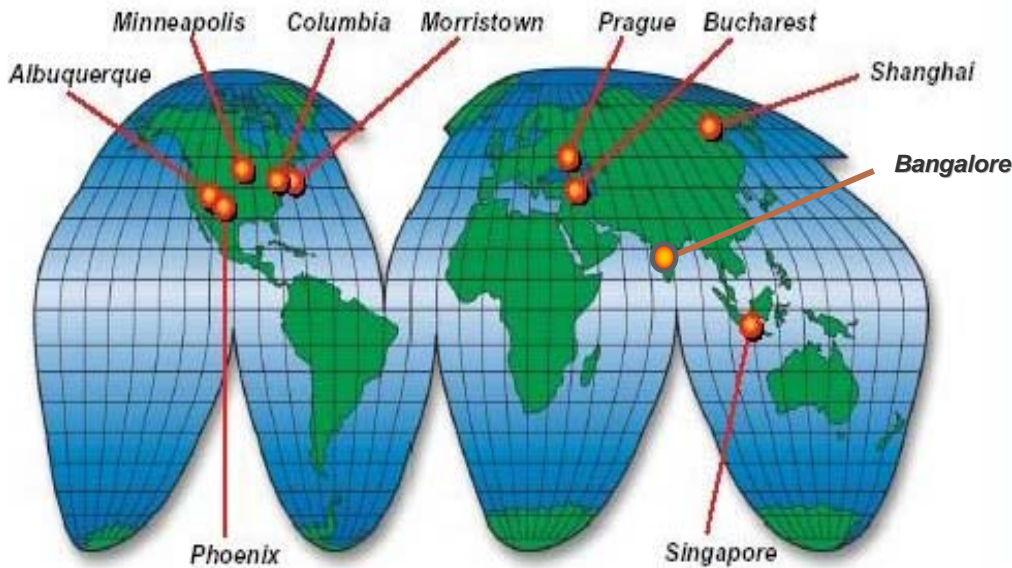
Automation & Control Solutions



Specialty Materials



Transportation Systems

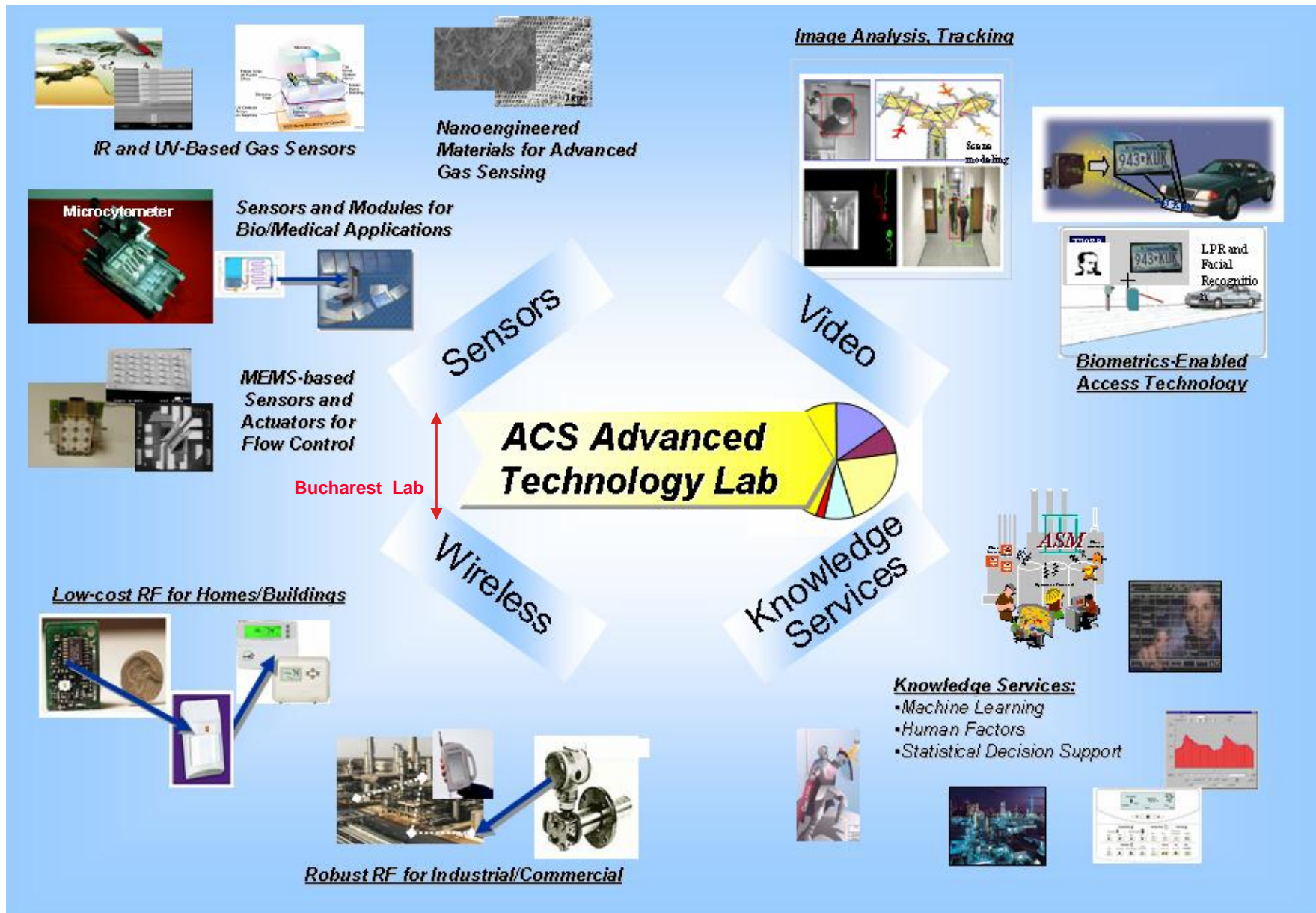


Honeywell Labs Worldwide

*Advanced R&D
supporting all
business
segments*

Over \$750 million spent annually on R&D

Honeywell ACS Labs - 4 Thrusts



ACS-Sensors & Wireless Global Labs

Minneapolis, MN

- MEMS, Microsystems, Wireless, Nanotechnology
- US Government funded research programs
- Ties to top US universities

Bucharest, Romania

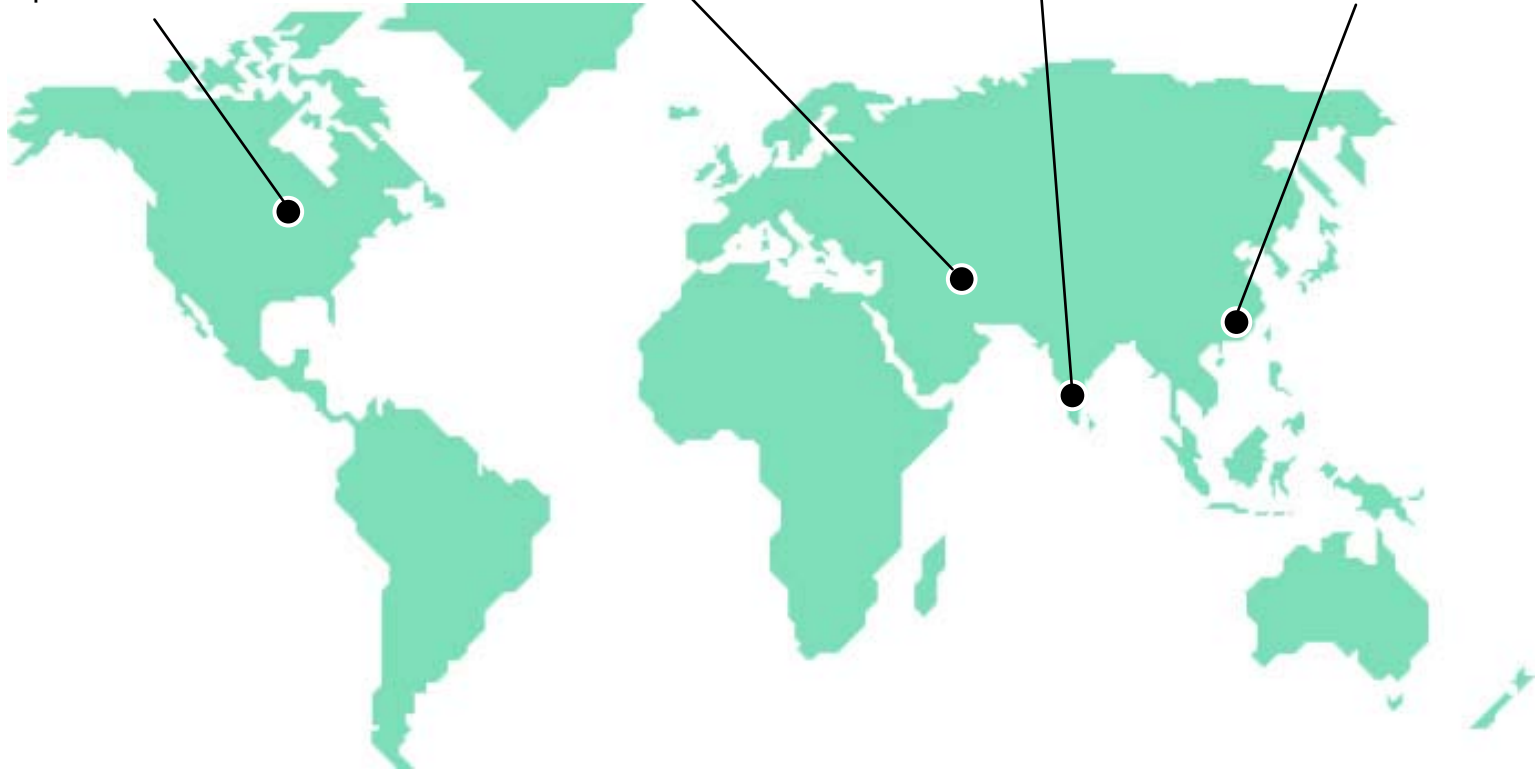
- SAW, Nanotechnology
- EU/RO funded research programs
- Ties to top European universities

Bangalore, India

- Wireless technologies research and development

Shanghai, China

- Biomedical Sensors, Magnetics, Energy harvesting
- Ties to top Chinese universities



Global talent developing next generation of sensors and wireless technologies for ACS

ACS-Gas/Chemical Sensing R&D Portfolio

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Materials

- Functional materials for gas sensing
- Stationary phase materials for PHASED
- High temperature materials for emissions sensors
- Materials for thermal gas generators used in self-calibration modules

Sensors

- FET NH₃ sensors for Refrigeration
- Low Cost CO₂ sensors based on FET
- Preconcentrator integrated with City Technology EC sensor
- Next generation colorimetric sensors
- μ discharge devices

Micro Instruments

- μ Raman Spectrometers
- PHASED - Preconcentrator Integrated with μ GC and ITMS
- Cavity Ringdown Spectrometers
- Terahertz Analyzers

Nano-materials can enhance the performance of sensing technology

FP-6-ICT

Submitted proposals : 1

Success rate : 100%

- IP project “e-CUBES” (2006-2009)
- 3D-MEMS technologies for autonomous WSN
- HON-research contribution

FP-7-ICT

Submitted proposals : 4

Success rate : 25% (decision for one project proposal is pending)

- Collaborative project “NEMSIC”* (2008-2011)
- No. 1 out of 160 proposals at the nanotechnology section
- HON-exploitation; NEMS research partner-nanomaterials synthesis for gas sensing

EU programs-an excellent opportunity for EU-academic-private research cooperation in Europe

Research Directions of Interest for Honeywell-Sensor Lab Bucharest

- **High efficiency nano-technology enable low cost solar cells**
 - nano-material research and characterization
 - low cost thin film technology for device realization
 - electrical and optical assessment of the solar cell
- **Wireless SAW sensing platform**
 - new processes for thin piezo-electric film realization
 - new nano-materials and technologies for low cost sensor realization
 - new concepts for wireless sensors interrogation
- **High Temperature Sensing**
 - nano-material research and characterization
 - new concepts and technologies for sensor realization
 - functional testing of high temperature sensors
- **Next generation of NEMS-MEMS gas sensing**
 - new sensing (nano) materials and their preparation
 - new concepts for NEMS/MEMS realization and their proof of concept
 - enhanced sensitivity and selectivity by nano-material/sensor design

New nano-materials and nano-processes for next generation products

Inputs from Honeywell Romania on the EU-Action Plan 2010-2014

Honeywell

- Consultation with EC and member states on nanotechnology action plan:
 - To form the EU strategy for robust development of nano-materials and nano-processes
- Coordination of efforts between EC-academic and private organizations needed for leveraging out of box thinking with the need for next generation products
- Industry' s dilemma : nanotechnology based FP-7 winning projects are high risk/H10+
 - Too long time to market for nanotechnology enabled products

Proposal:

- Create a special EU call on applied nanotechnology
 - Industry to provide unmet requirements for market applications
 - Proof of concept for nano-based demonstrator within project time
 - Nano-enabled emerging products to solve packaging challenges
 - A special topic on MEMS combined with nanomaterials: a good transition to nano-enabled products

Strong need for a shorter time to market for EU nano-material and nano-process projects

- Honeywell Romania would like to thank the ANCS and EU for this invitation
- Honeywell is oriented to nanotechnology enabled research for next generation products and new alternative energy sources.
- EU-Academy-Industry-partnership on nanotechnology programs
 - a strong need for market oriented next generation products
 - a needed link for reducing the risks in EU programs in nanotechnology

**Thanks to ANCS and EC for public consultation
on the nanotechnology Action Plan with Romanian organizations**