Search for a Spanish Partner for a Bilateral R&D Project

Organization	
Date of Request:	15 February 2026
Company name:	Birla Institute of Technology & Science Pilani – Dubai Campus
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SECTION 1: Entity launching the partner search *(Please give brief / to the point explanations. For more explanation on any point below, you may add a short paragraph as an annexure, with this document.)*	
Sector	Artificial Intelligence for Healthcare, Digital Health Technologies, VOC Sensor Systems, Embedded AI Systems, Non-Invasive Diagnostic Technologies.
Entity mission or core functions	BITS Pilani, Dubai Campus is a research-driven academic institution focused on applied research and translational technology development. Through APPCAIR (Anuradha & Prashanth Palakurthi Centre for AI Research), the institution develops AI and sensor-driven solutions with emphasis on real-world deployment. The Dubai RDI-funded project AIRE+ focuses on AI-based non-invasive risk scoring using breath VOC biomarker analysis, targeting early screening support for diabetes and lung cancer.
Date of establishment	BITS Pilani (1964, India); Dubai Campus established in 2000.

Ownership (if public and traded, add stock exchange and ticker symbol)	Private Deemed University (Not-for-profit educational institution).
Total number of employees	Approximately 250+ academic and administrative staff at Dubai Campus.
Number of employees in R&D	100+ faculty members actively engaged in funded research; multidisciplinary R&D teams.
Key products sold or services provided	• AI research and translational innovation • Embedded system development • Sensor-driven AI analytics • Industry collaborations and technology transfer • Graduate research training • Prototyping and pilot validation platforms
Entity core technical competences	• Machine learning and deep learning for biomedical data • Physics-informed AI modeling • Multimodal sensor fusion • VOC signal processing and biomarker extraction • Embedded AI deployment on edge devices • Low-power inference optimization • Clinical pilot data validation frameworks
Key R&D programs and activities	• Dubai RDI-funded AIRE+ Project: Non-invasive breath biomarker risk scoring platform • AI in healthcare diagnostics • Edge AI and secure inference systems • Cross-border collaborative R&D initiatives • Translational prototype-to-pilot development
Examples of accomplishments	• Awarded funding under Dubai RDI Programme (Cycle 2) • Active collaborations with UAE research institutions • Publications in AI, healthcare analytics, and embedded systems • Ongoing prototype development of VOC-based AI diagnostic system
Company strategic orientation	The strategic objective is to advance the AIRE+ system from a validated integrated prototype (TRL 5) to a pilot-ready system validated in relevant operational environments (TRL 7) through experimental development, reliability enhancement, embedded integration, and

	robustness validation under real-world variability. Collaboration with a Spanish R&D partner supported by CDTI is sought to accelerate system-level maturation and validation readiness.

SECTION 2: Spanish Company Profile *(Please provide a brief summary of the prospective partner company or organization. This summary may address some or all of the points below)*	
Profile of ideal technology partner	An R&D-intensive company or technology-driven research organization with demonstrated expertise in sensor system engineering, embedded AI deployment, and experimental validation of biomedical or environmental sensing platforms is sought as the ideal Spanish partner. Proven experience in transitioning systems from validated laboratory prototypes (TRL 5) to integrated pilot-ready systems (TRL 7) through experimental development, system redesign, and reliability optimization is expected. Availability of internal R&D teams capable of advanced hardware–software co-design and algorithm stabilization under real-world variability conditions is required.
Core technological competencies and expertise	Competencies in the following areas are expected to be demonstrated by the prospective partner: • Advanced gas sensor engineering and calibration methodologies. • Signal conditioning and noise reduction architectures. • Embedded systems design for low-power AI inference. • Edge AI optimization and model compression techniques. • Sensor drift compensation and environmental robustness modeling. • Multimodal data fusion within biomedical systems. • Experimental validation frameworks

	for medical-grade sensing devices. • System reliability engineering and fault tolerance design. Experience in biomedical device R&D, diagnostic platforms, or regulated sensing environments would be considered highly advantageous.
Other essential qualifications (e.g.: ownership, track records etc.)	• Competencies in the following areas are expected to be demonstrated by the prospective partner: • Advanced gas sensor engineering and calibration methodologies. • Signal conditioning and noise reduction architectures. • Embedded systems design for low-power AI inference. • Edge AI optimization and model compression techniques. • Sensor drift compensation and environmental robustness modeling. • Multimodal data fusion within biomedical systems. • Experimental validation frameworks for medical-grade sensing devices. • System reliability engineering and fault tolerance design. Experience in biomedical device R&D, diagnostic platforms, or regulated sensing environments would be considered highly advantageous.
If you have a list of companies with whom you are in contact or interested in contacting, please provide contact details	No specific companies currently identified. Partner search requested through CDTI database to identify entities aligned with advanced biomedical sensing and embedded AI R&D.
If you are interested in collaboration: please specify details and other important information you want to share with a potential company	The collaboration aims to strengthen the technological maturity of the AIRE+ breath VOC diagnostic platform through: • Sensor architecture refinement • Advanced calibration modelling • AI robustness enhancement under environmental and physiological variability • Embedded system integration • Reliability testing under pilot

	conditions • System stabilization toward TRL 7 readiness The Spanish partner will conduct experimental development activities to optimize system performance and robustness in preparation for clinical pilot deployment.
Interested areas of collaboration	• Experimental R&D on gas sensing technologies • Edge AI algorithm optimization • Biomedical signal modelling • System-level integration testing • Hardware–software co-design • Reliability engineering and validation
Specific R&D contribution you are seeking/offering	**Spanish Partner Contribution:** • Advanced sensor system redesign and calibration enhancement • Development of drift-compensation algorithms • Embedded AI optimization for constrained hardware environments • Robustness modelling under temperature/humidity variability • Pilot-level prototype refinement and integration testing • Experimental validation studies toward TRL 7 **UAE Partner (BITS Dubai) Contribution:** • AI risk scoring model development • VOC biomarker dataset generation and annotation • Clinical pilot coordination and validation environment • System integration with existing AIRE+ architecture • Algorithmic modelling and performance benchmarking

Signature
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Date: 15/02/2026

Annexure

Technological Positioning and TRL Advancement Pathway

The AIRE+ project, funded under the Dubai RDI Programme, is structured for the development of a non-invasive breath VOC-based AI diagnostic support system. During the initial phase, an integrated prototype will be developed and validated under controlled laboratory conditions, with the objective of achieving Technology Readiness Level (TRL) 5 through the integration of sensing modules, AI-based risk scoring models, and defined validation protocols.

Following laboratory validation, advancement of the system toward TRL 7 will be undertaken. TRL 7 is defined as demonstration of a system prototype in a relevant operational environment.

To enable progression from TRL 5 to TRL 7, the following experimental development activities will be carried out:

- Advanced sensor calibration and drift compensation under environmental variability.
- Refinement of signal conditioning and noise reduction architectures.
- Optimization of embedded AI models for stable and low-power inference.
- Robustness modeling across physiological and contextual variability.
- Refinement of system-level hardware–software integration.
- Reliability validation and structured pilot-environment testing.

These activities are categorized under experimental development and system maturation rather than fundamental research. Iterative prototype refinement, architectural redesign, and validation under realistic operational conditions will be performed.

Collaboration with a Spanish R&D partner supported by CDTI is proposed for strengthening system robustness, enhancing reliability engineering, and facilitating progression from laboratory prototype validation (TRL 5 target) to pilot-ready demonstration in relevant environments (TRL 7 target). Through this bilateral R&D collaboration, delivery of a technically mature and validated diagnostic support system prepared for structured pilot deployment is anticipated.