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CAPABILITY STATEMENT

Micromax

An Australian
Technology leader
delivering innovative,
high-quality solutions
backed by decades of
expertise

“At Micromax, R&D isn’t just about innovation — it’s about turning bold ideas into practical, high-impact solutions that redefine what’s possible for our customers.”



COMPANY OVERVIEW

Where Global Technology meets Australian Industry

Micromax is an innovation-driven organisation with strong research and development capabilities focused on the design, development, and optimisation of advanced technology solutions.

Our R&D function underpins our ability to deliver reliable, scalable, and commercially viable products and services, supporting both internal product development and collaborative industry outcomes.

We apply structured R&D methodologies to transform ideas into practical solutions, ensuring technical feasibility, performance optimisation, and alignment with market and regulatory requirements.

✓ Commercial

Delivering embedded computing, connectivity, and smart monitoring solutions that improve operational efficiency across commercial and industrial environments.

✓ Health

Providing medical-grade technology and IT solutions that enhance clinical workflows and patient care across healthcare and aged care environments.

✓ Industrial

Providing rugged, high-reliability technologies engineered to keep mission-critical equipment online when failure isn’t an option.



Our Services

Micromax R&D activities are centred on:

- Product design and engineering development
- Applied research and prototyping
- Technology evaluation and optimisation
- Process improvement and innovation
- Integration of emerging technologies
- Design for manufacturability, reliability, and compliance

Our approach combines analytical research with hands-on experimentation to reduce development risk and accelerate time-to-market.

Software & Engineering Development

Micromax delivers end-to-end engineering across software, embedded systems, and cloud platforms. Specialising in secure, reliable, and maintainable solutions that integrate hardware, firmware, and modern web technologies into cohesive, production-ready systems.

- Web application and dashboard development for real-time monitoring and control
- Embedded systems and firmware engineering across BLE, LoRaWAN, and custom hardware
- Cloud platform integration and backend development
- Reverse engineering, system analysis, and structured testing for legacy and modern systems

University Collaboration & Prototyping Facilities

Through long-standing collaboration with the School of Engineering at the University of Wollongong, Micromax accesses advanced research expertise, specialised facilities, and multidisciplinary student teams. Together, we accelerate prototyping, experimentation, and applied research across electronics, AI, and IoT.

- Joint development of AI models for image and signal classification (e.g., CCTV-based gender detection)
- Prototype electronics across embedded systems, power electronics, control hardware, and IoT
- LoRaWAN, BLE, and wireless systems development and testing
- Cloud platform integration and backend development

International Technology & Manufacturing Partners

Micromax works with a network of international technology partners who provide advanced manufacturing, chip-level engineering, and specialised hardware capabilities. These partnerships enable rapid prototyping, scalable production, and access to cutting-edge SoC and embedded technologies.

- Full PCB and PCB-A manufacturing through trusted global partners
- SoC, RF, and chip-level solutions supported by partners such as Semtech
- Industrial-grade embedded platforms from ADLINK, IBASE, and Amp
- Custom enclosure design, mechanical development, and ruggedisation options

Research, Innovation & Testimonials

Our R&D work is strengthened by collaborative research with academic and industry partners, resulting in novel algorithms, published papers, and validated prototypes. Feedback from clients and collaborators highlights our technical depth, reliability, and commitment to innovation.

- Published research with UOW on WiFi CSI-based human detection and vital-sign monitoring
- Development of advanced algorithms for smart-mattress sensor data processing
- Proven track record delivering innovative, field-tested solutions across multiple domains

Our Process

Micromax actively supports collaborative R&D initiatives with customers, suppliers, and research partners. We work closely with stakeholders to co-develop solutions, share technical insights, and ensure outcomes align with commercial and operational objectives.

Micromax is committed to ongoing investment in research and development as a core driver of competitiveness and growth.

Our R&D capability supports sustainable innovation, adaptability to evolving technologies, and the delivery of high-quality solutions for diverse applications.

Stage 1



Concept Development & Feasibility

- Market-informed concept generation
 - Technical feasibility studies
 - Risk identification and mitigation
 - Cost and performance trade-off analysis
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Stage 2



Design & Prototyping

- Iterative design development
 - Rapid prototyping and validation
 - Functional testing and refinement
 - Design optimisation for performance and durability
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Stage 3



Testing & Validation

- Performance and stress testing
 - Compliance-oriented validation processes
 - Reliability and lifecycle assessment
 - Continuous improvement through data-driven insights
 - Improvement of existing products and processes
 - Evaluation of new materials, components, and technologies
 - Scalability and manufacturability considerations
 - Documentation and knowledge capture
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Stage 4



Commercialisation & Outcomes

Our R&D function is tightly integrated with operations, enabling:

- Smooth transition from development to production
- Reduced technical and commercial risk
- Faster innovation cycles
- Practical, market-ready solutions

We focus on delivering measurable value through innovation that enhances product capability, efficiency, and long-term performance.

Our Current R&D Projects

Smart Mattress Cover

Problem: Aged-care facilities needed a reliable way to detect in-bed, out-of-bed, and repositioning events to prevent falls and pressure injuries, but existing systems were inaccurate, untested in Australian conditions, and unsuitable for real-world care environments.

Solution: We developed a smart-mattress analytics system that uses a 240-point pressure sensor pad along with a novel behaviour-analytics algorithm. The system was refined through controlled data collection, infrastructure assessment, and live trials in aged-care facilities.

Outcome: Delivered accurate event detection, stable wireless performance, and validated results across multiple care sites, demonstrating a clinically meaningful and operationally reliable fall and pressure-injury prevention tool.



WiFi CSI Human presence detection

Problem: Healthcare and aged-care environments needed a privacy preserving way to detect human actions such as presence, sitting, standing, and sleeping. Camera-based systems raised privacy concerns, wearables suffered from compliance issues, and existing WiFi-sensing research failed to perform reliably outside controlled lab conditions.

Solution: A WiFi-CSI-based activity-recognition system was developed using custom ESP32 hardware, proprietary signal-processing pipelines, engineered CSI features, and optimised machine-learning and deep-learning models. The system converts ambient WiFi signal variations into real-time activity insights without cameras or wearables.

Outcome: Achieved ~90% classification accuracy, improved cross-position generalisation, reduced posture-confusion rates, and demonstrated sub-2-second detection latency. A large, anonymised CSI dataset was created to support future commercialisation and IP development.

AI Gender Detection from CCTV footage

Problem: Retail centres required demographic insights, but overhead CCTV made facial-based analytics impossible due to privacy concerns, angle, lighting variability and crowding. Existing AI systems could not operate reliably under these constraints.

Solution: We built a camera-agnostic AI model that determines gender using non-facial appearance cues, supported by custom preprocessing, lighting normalisation, occlusion handling, and frame-averaging techniques. The system runs on standard CCTV without specialised hardware.

Outcome: Achieved high accuracy across diverse lighting conditions and camera types, maintained low false positives in crowded scenes, and was successfully validated in live shopping-centre environments.

Intrinsically Safe UPS Supercapacitor System

Problem: Underground mines needed a fire-safe, intrinsically safe backup-power solution for critical electronics. Traditional battery-based UPS units posed ignition risks, degraded quickly, and were unsuitable for harsh mining environments.

Solution: A supercapacitor-based UPS system was engineered for intrinsic safety, long cycle life, and stable performance in high-temperature, high-vibration conditions. The design eliminated thermal and chemical risks while providing reliable short-term backup power.

Outcome: Delivered a rugged, fire-safe power-backup solution that improves operational safety, reduces maintenance requirements, and ensures continuity of critical underground systems.



Our Team

Antonio Fantasia Managing Director



An experienced technology executive specializing in embedded systems and industrial computing solutions. With a PhD from Sapienza University of Rome and decades of experience in IT and electronics, he leads research, development, and engineering initiatives supporting advanced industrial and connectivity technologies.

Shakif Aziz Research & Development Leader



B.Engg (Hons, Class I) is an engineer specialising in hardware-software development, integration, and architecture with experience leading complex R&D projects end-to-end, applying strong problem-solving and project management to deliver robust, reliable engineering outcomes.

Andy Dsouza Software Engineer



Master of IT (Distinction) is a Software engineer with commercial experience building and maintaining production systems across web application development, cloud infrastructure, and enterprise integrations.

Anthony Cuoco Business Development Executive



IT and Project Management professional with 40+ years' experience across manufacturing, healthcare, and government. Holds a Master of Management and a bachelor's in mathematics (Computer Science). Delivering strong business outcomes through strategic initiatives at organizations including BHP, WA Police, CSC, Oasis Asset Management, and Pillar. Certified in ITIL, Business Process Management, and Project Management, with a pragmatic focus on advancing R&D and innovation.

Jennifer Chen Supply & Distribution Manager



Industrial and embedded technology professional with 20+ years' experience with Taiwanese companies. Specialized in industrial solutions, business development, global supply chain management, with strong cross-cultural collaboration. Extensive experience managing RFI/RFP/RFQ tenders for healthcare and industrial projects across multiple markets. Extensive experience in tender management (RFI/RFP/RFQ) for healthcare and industrial projects across multiple vertical markets.

Tory Macri Operations Manager



MBA (Distinction) is a senior operations and transformation executive with more than 30 years of experience leading complex organisations through growth, cultural change, and performance improvement across regulated and commercially driven sectors.

Enrico Broletto Solutions Architect



Bachelor of Mathematics (Computing Science) with advanced certifications in PLC Programming and Power Control Electronics, bringing 35 years of experience in industrial electronics, embedded systems, software development, large-scale networking, and private cloud platforms for factory automation and people counting systems.

Chris Stevens Technical Support Specialist



DipAppSc is a technical specialist in corporate IOT devices and CCTV in deployment, monitoring, and support. Experience in the field of electronic design, manufacturing processes for product production.

WHO WE WORK WITH



Contact

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