



Curtin University

**DRIVING WORLD CLASS
RESEARCH, INNOVATION
AND WORKFORCE CAPABILITY**

Curtin University: Transforming Discovery into Real-World Capability

Curtin University is a world-leading ecosystem for research, innovation and workforce development uniting world-class expertise with trusted partnerships to turn discovery into real-world capability and impact.

Curtin integrates capability across critical minerals, energy, oil and gas, defence, space, advanced manufacturing, AI, robotics, corrosion, immersive visualisation and space-to-seabed awareness, supporting the full industrial lifecycle from discovery and design to manufacturing, sustainment, decommissioning and workforce development.

With internationally recognised infrastructure, including the John de Laeter Centre, Curtin Corrosion Centre, the Photon Forge Additive Manufacturing Facility,

the Western Australian School of Mines, and many others, Curtin delivers deployable solutions that extend the life and performance of critical assets, secure mineral and energy supply chains, enable sovereign manufacturing and certification, advance AI-enabled and autonomous systems, and build highly skilled talent through tailored training.

Curtin's Defence Industry Security Program (DISP) accreditation and Nebula Secure Platform provide a secure collaboration environment for research, protected data sharing and trusted co-development with government, industry and defence partners.

Organisations can partner with Curtin through co-designed research, strategic alliances, innovation projects, competitive grant collaborations, commercialisation and workforce development initiatives—supported by dedicated governance and clear pathways from discovery to implementation.

Grounded in academic freedom, research integrity and the responsible application of knowledge, Curtin is a strategic partner of choice for organisations seeking practical, scalable and transformative outcomes across the resources, energy, defence, space and technology sectors.





BUILD AND SUSTAINMENT

Curtin University's Build & Sustainment capability delivers end-to-end support for the design, construction, operation, maintenance, life extension, and decommissioning of maritime, energy, and critical infrastructure assets.

Capability includes:

- Corrosion science, hydrogen embrittlement, and structural integrity
- Offshore corrosion simulation and degradation modelling
- Advanced metal additive manufacturing and repair systems
- Defence fabrication, coating, and qualification
- Materials testing, validation, and certification
- Predictive maintenance and lifecycle optimisation
- Robotics-enabled inspection and sustainment systems
- Defence workforce pipelines and technical training pathways
- Human performance and human-machine integration
- Space-to-seabed monitoring for asset integrity and operational awareness

Key centres:

- **Centre for Infrastructure Monitoring and Protection**
Description to go here
- **Centre for Optimisation and Decision Science (CODS)**
High-performance modelling, simulation, and optimisation for complex defence systems and lifecycle management.
- **Curtin Corrosion Centre**
A globally recognised research and training hub that delivers industry-focused solutions in corrosion prevention, asset integrity and materials durability for the defence, maritime, energy, mining and infrastructure sectors.
- **Corrosion Flow Loop Facility**
Real-world simulation facility for offshore corrosion, degradation modelling, and materials performance analysis under extreme conditions.
- **Curtin Institute for Data Science (CIDS)**
AI and machine learning for predictive maintenance, logistics optimisation, and autonomous defence decision support.
- **High Performance and Intelligent Systems (HPIS)**
Secure autonomous architectures, swarm intelligence, and resilient defence control systems.
- **John de Laeter Centre (JdLC)**
One of Australia's premier analytical research facilities, housing more than \$50 million in advanced instrumentation across 14 specialist laboratories that support world-leading research and industry collaboration in critical minerals, energy, defence, space and advanced materials.
- **Photon Forge Additive Manufacturing (PFAM)**
A world-class metal additive manufacturing hub that combines advanced industrial 3D printing with cutting-edge materials characterisation to develop and qualify components for defence, maritime, mining, energy and space applications



WORKFORCE DEVELOPMENT AND HUMAN CAPABILITY

Curtin develops a highly skilled, industry-ready workforce through integrated education, research and applied training

Capability includes:

- Cadetships and degree apprenticeships
- Workforce transformation and future skills design
- Industry co-designed training pathways
- Engineering, science, AI, robotics, and materials skills pipelines
- Human-machine teaming capability
- Cognitive performance and operational resilience
- Academic capability development and professional learning systems

Key centres and faculties:

- **Centre for Learning and Development**
University-wide capability development hub enabling scalable workforce training and professional learning across relevant disciplines.
- **Faculty of Science and Engineering**
Core academic faculty delivering education and research across engineering, computing, mathematics, and physical sciences underpinning capability development.
- **Future of Work Institute (FOWI)**
Research into workforce transformation and human-machine collaboration.





SPACE, MARITIME AND SITUATIONAL AWARENESS

Curtin delivers integrated sensing and intelligence from space to seabed.

Capability includes:

- Spacecraft engineering and payload prototyping
- Maritime sonar and underwater acoustics
- Space domain awareness and satellite tracking
- RF and electromagnetic sensing
- GNSS navigation and timing systems
- Remote sensing and Earth observation
- Autonomous sky and meteor tracking

Key centres:

- **Centre for Marine Science and Technology (CMST)**
Maritime acoustics, sonar, and naval performance research.
- **Curtin Institute of Radio Astronomy (CIRA)**
RF sensing and electromagnetic surveillance.
- **Desert Fireball Network (DFN)**
Autonomous sky monitoring and meteor tracking.
- **Global Navigation Satellite Systems GNSS Program**
Precision navigation and timing systems.
- **Remote Sensing & Satellite Research Group (RSSG)**
Earth observation and maritime intelligence.
- **Space Science Technology Centre (SSTC)**
Satellite systems and space situational awareness.



CRITICAL RESOURCES, MATERIALS AND MANUFACTURING

Curtin enables industrial capability through advanced materials science, manufacturing, and resource security.

Capability includes:

- Materials science research and performance engineering
- Advanced materials engineering and alloy development
- Metal additive manufacturing and hybrid fabrication (PFAM)
- Materials testing, certification, and qualification (JdLC)
- High-grade manufacturing assurance
- Critical minerals and rare earth supply chains
- Strategic resource independence

Key centres:

- **Critical Minerals Trailblazer**
Industry-led commercialisation of critical minerals technologies.
- **Curtin Corrosion Centre**
A globally recognised research and training hub that delivers industry-focused solutions in corrosion prevention, asset integrity and materials durability for the defence, maritime, energy, mining and infrastructure sectors.
- **Curtin Frontier Institute for Geoscience Solutions (C-FIGS)**
Integrated geoscience capability for resource discovery and optimisation.
- **Curtin Materials Science Institute**
Foundational research institute for materials design, performance, degradation, and engineering innovation.
- **John de Laeter Centre (JdLC)**
One of Australia's premier analytical research facilities, housing more than \$50 million in advanced instrumentation across 14 specialist laboratories that support world-leading research and industry collaboration in critical minerals, energy, defence, space and advanced materials
- **Photon Forge Additive Manufacturing (PFAM)**
A world-class metal additive manufacturing hub that combines advanced industrial 3D printing with cutting-edge materials characterisation to develop and qualify components for defence, maritime, mining, energy and space applications
- **WA School of Mines (WASM)**
National leader in minerals engineering and critical resource systems.





ROBOTICS AND AUTONOMOUS SYSTEMS

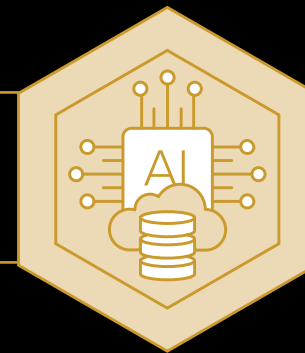
Curtin delivers autonomous capability for operation in complex, contested, and high-risk environments.

Capability includes:

- Autonomous land, air, and maritime systems
- Swarm intelligence systems
- Sensor fusion and perception technologies
- Secure autonomous system architectures
- Human-robot teaming
- Robotic inspection and operational systems

Key centres and platforms:

- **Biorobotics Research Lab**
Research focussing on autonomous robotic manipulation, enhancement of image-guided neurosurgery, and rehabilitative and assistive technology
- **Curtin Institute for Data Science (CIDS)**
AI-enabled perception, navigation, and autonomous decision systems.
- **High Performance and Intelligent Systems (HPIS)**
Secure autonomous systems, swarm coordination, and resilient communications architectures.
- **Robotics & Automation Group**
Autonomous systems development across mobility, manipulation, and field robotics.



DATA SCIENCE, AI, DECISION SYSTEMS AND EMERGING TECHNOLOGIES

Curtin develops world-class digital, intelligent, and transformative technology systems

This integrated capability combines artificial intelligence, machine learning high-performance computing, simulation, immersive visualisation, digital twins, autonomous systems, and cross-sector data innovation platforms to support complex environments.

Capability includes:

- Artificial intelligence and machine learning systems
- Predictive analytics and decision intelligence
- High-performance computing and simulation
- Digital twins and operational modelling
- Autonomous system intelligence and optimisation
- Internet of Things (IoT) and sensor networks
- Virtual and augmented reality training systems
- Immersive visualisation and collaborative environments
- Cross-sector data integration and innovation ecosystems
- Real-time decision-support platforms

Key centres and platforms:

- **Centre for Optimisation and Decision Science (CODS)**
High-performance modelling, simulation, and optimisation for complex systems and lifecycle decision-making.
- **Curtin Institute for Data Science (CIDS)**
World-leading AI and machine learning capability enabling predictive intelligence, autonomy, logistics optimisation, and advanced analytics.
- **The HIVE (Hub for Immersive Visualisation and eResearch)**
A world-leading immersive visualisation facility that enables researchers, industry and government partners to explore complex data in high-resolution 3D environments
- **WA Data Science Innovation Hub (WADSIH)**
State-scale data innovation platform enabling large-scale data integration, advanced analytics, and cross-sector collaboration across government, industry, and research.





Driving innovation across renewables, hydrogen, carbon transition, decommissioning and energy resources, supporting future-focused energy solutions

ENERGY, ENVIRONMENT AND DECOMMISSIONING

Capability includes:

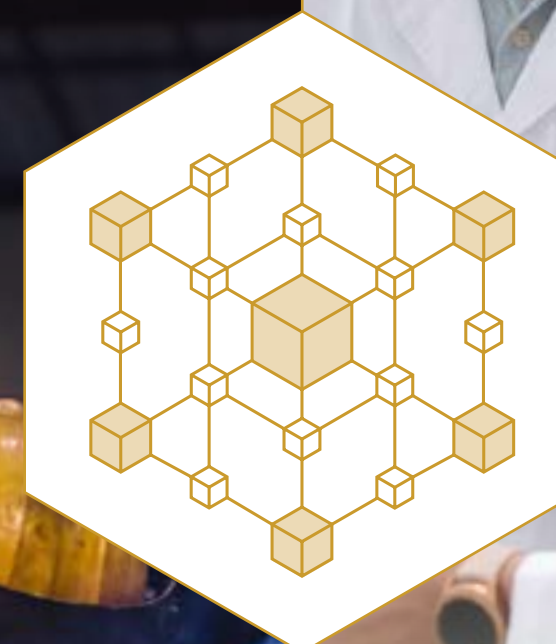
- Offshore infrastructure decommissioning
- Energy transition systems
- Circular economy approaches
- Environmental remediation
- Full lifecycle optimisation

Key centres and platforms:

- **Curtin Institute for Energy Transition (CIET)**
Energy system transformation and offshore decommissioning expertise.
- **Western Australian School of Mines (WASM)**
Engineering support for energy systems and sustainable industrial operations.



**Curtin delivers
the world-class
research,
innovation,
and workforce
development...**



**...to strengthen
Australia's
capability
across industry,
technology and
critical national
priorities.**



Curtin University

**Partner with Curtin University
and explore the possibilities.**

**For more information please email
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