Monash University works in partnership with industry to develop innovative technologies that assist the manufacturing sector. Companies can work with Monash through a variety of ways.

**Licensing**
Monash is recognised for its success in developing new products and services with our commercial partners including the development of intellectual property and the commercialisation of inventions.

A range of technologies developed independently by Monash researchers is available for further development and licensing.

**Consultancy**
Monash Consulting Services connects organisations seeking to resolve specific problems or to gain competitive advantage in their markets with experts at Monash University. By accessing independent expertise, organisations are able to identify and implement innovative, new approaches to business.

**Contract research**
Our team of Business Development Managers assist organisations interested in arranging research contracts with Monash University including:
- Identifying capabilities relevant to your specific business needs
- Coordination of research partnerships and contract negotiations
- Ongoing account management

**Shaping Australia’s manufacturing industry**
The high Australian dollar and increased global competition have created a challenging environment for Australian manufacturers. The ability to innovate and form strategic partnerships is essential for a globally competitive manufacturing industry.

South-East Melbourne is home to 40 per cent of Victoria’s manufacturing businesses and leading research providers including, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Melbourne Centre for Nanofabrication and the Australian Synchrotron. This concentration of manufacturing industry leaders, research organisations and small and medium sized enterprises, means the region is well placed to confront the major challenges facing manufacturing.

Monash University’s Clayton campus is located in Melbourne’s South East within the heart of Australia’s manufacturing precinct. Our areas of innovation and strength include the development of new products and technologies, more cost-effective and efficient production processes, new business models, customer-focused designs, and global supply chain integration.

Opportunities for collaboration have been boosted by The Australian Government’s funding support for an Australian Manufacturing Industry Innovation Precinct headquartered at Monash’s New Horizons Centre. Our ability to provide solutions for industry is further strengthened by collaboration and strategic partnerships with other local research providers and internationally with Warwick University in the United Kingdom.

Warwick University’s WMG Solutions helped transform manufacturing in Britain’s industrial heartland. Through our formal alliance with WMG, Monash will play a major role in shaping Australia’s advanced manufacturing industry into the future.

**Leverage government funding to support research collaboration and access to infrastructure**
A range of state and federal government funding schemes provides funding to support companies interested in accessing Monash research and services including, for example, the ARC Linkage Projects Scheme and the ARC Industry Transformation Program.

The Victorian Government’s Voucher Program will allow companies to access Monash’s world-class technology research platforms on a fee-for-service basis.
Who we are
Monash University is a global leader in innovative, multidisciplinary research. Ranked in the top 100 universities in the world, Monash is Australia’s largest university.

Monash’s six Australian campuses are complemented by a strong and expanding international presence in Italy, India, Malaysia, South Africa and China and an alliance with Warwick University in the United Kingdom.

* Times Higher Education World University Rankings 2012

Contact us
Industry Engagement and Commercialisation
Dr Heather St John, Director Industry Engagement
Tel: +61 3 9902 9854, Email: heather.stjohn@monash.edu
Web: monash.edu/industry

Image: Professor Xinhua Wu
Photo: Greg Ford
Monash is leading the next revolution in manufacturing through the discovery of lighter, more cost-effective materials with the potential to revolutionise manufacturing processes.

Our people

Professor Xinhua Wu
Xinhua is Director of the ARC Centre of Excellence for Design in Light Metals and is a world leading expert in Ti and TiAl alloys and advanced powder processing.

Selby Coxon
Selby heads the Industrial Design program, teaching in both the undergraduate and postgraduate programs. His research interests are public transport design particularly rail.

Associate Professor Arthur de Bono
Arthur’s research looks at innovations in designs for major national research corporations and commercial organisations.

Dr Robbie Napper
Robbie’s expertise is in the design and manufacture of public transport vehicles, especially examining themes of modularity, mass customisation, user experience and user-centred design in public transport.
Monash Industrial Design researchers are working with transport, medical, and manufacturing industries to integrate design thinking and world-class design practices into businesses that wish to achieve and sustain international competitiveness.

Design is a strategic business capability that has the potential to increase firms’ performance and ability to compete globally. Through using design, businesses can become more efficient, increase exports, and improve productivity.

Professional services offered to manufacturing businesses include:
- Ergonomic Analysis: including assessment of tools, equipment and workplaces
- Product documentation: Monash uses computer-aided design for design documentation
- 3D visualisation: Including a comprehensive range of visualisation services such as 3D images and animations
- Prototyping: Monash uses the latest digital making technologies such as rapid-prototyping and laser cutting to create presentation models for businesses to study, visualise and understand their workspace in 3D

Modelling and simulation
Modelling and optimisation can be used to solve real-world problems.
Mechanical modelling research at Monash is mostly on steels, copper and light alloys based on aluminium, magnesium and titanium.
Another area of modelling is concerned with thermodynamics and kinetics of solid state phase transformations and recrystallisation behaviour in metals and alloys.
Applications:
- Equal channel angular pressing (ECAP)
- Microforming, and other modern technologies
- Prediction of mechanical performance under creep and fatigue conditions

Additive manufacturing
Monash is a global leader in additive manufacturing research.
Additive manufacturing creates 3D objects directly from CAD files by sequentially depositing thin layers of liquid or powdered metals, polymers or other materials on a substrate.
Benefits to industry:
- Reduces energy and materials usage
- Not dependent on economies of scale
- Cost effective and flexible production cycle
- Enables new and innovative designs
- Rapid prototyping

“MCAM is going to drive the development of a field that will have a myriad of economic and environmental benefits.”
Professor Xinhua Wu

Delivering impact
Advancing aerospace
The Monash Centre for Additive Manufacturing (MCAM) is leading the next generation in aerospace manufacturing.
The world-class centre has attracted international aerospace heavyweights eager to see first hand the world’s best additive manufacturing equipment.
Additive manufacturing, including 3D printing, builds products directly from digital designs through a layering process. Traditional manufacturing methods result in wastage of up to 90 per cent. By building products from the ground up additive manufacturing is virtually waste-free.
The aerospace industry is seeking new materials that are lighter yet stronger, cheaper to manufacture and that will help to halve the aviation industries’ overall carbon emissions by 2050.
Monash’s Professor Xinhua Wu, who is internationally respected in the field of advanced manufacturing, and her team at MCAM have taken on this challenge.
One of Xinhua’s new projects is a new aluminium alloy that will make aircraft 30 to 40 per cent lighter, twice as fuel efficient and still structurally sound.
So significant is this project that Microturbo, the European Space Agency and Bombardier are working in close partnership with Xinhua and the MCAM team of researchers.
Her team has developed several new engine components that are undergoing early evaluation trials for one of the major European aerospace companies.
“If they are lighter, equally durable and cheaper to manufacture – this company is prepared to offer an exclusive six-year manufacturing deal for an Australian company to manufacture these components, Xinhua said.
“MCAM is going to drive the development of a field that will have a myriad of economic and environmental benefits.” she said.
Xinhua says the key factor with such industrial research is achieving this economically.
“The goal is not just to develop stronger, lighter, more durable and more stable metals. We have to create new materials that not only have the best performance but are also the cheapest.”
Condition monitoring

Monitoring the condition of processes, equipment and infrastructure allows preventative maintenance to be scheduled, maintenance costs to be reduced and operational efficiencies to be increased.

Monash researchers have expertise in remote condition monitoring and data analysis including using wireless sensor networks for industrial processes, machine fault analysis and residual life prediction.

Applications:
- Network capacity evaluation for assembly lines
- Analysis of manufacturing cell and equipment controllers
- Design of wireless networks for airport logistic facilities
- Condition monitoring technologies currently deployed in the mineral processing, energy and manufacturing sectors
- Fully automated condition monitoring system for railways

Nanostructured metals

Nanostructuring metals by severe plastic deformation is a group of special metal forming techniques that provide exceptional grain refinement down to submicron level without any significant change in the shape and dimensions of the work piece.

Applications:
- Strengthened aluminium alloys for the automotive industry
- Production of strong wires and cables or composite cables
- Production of strong multi-layered aluminium-titanium rolled products
- Thinner aluminium alloys for the aircraft industry

Additive layering

Corrosion is a constant threat to the safety of Australia’s transport infrastructure, particularly the aviation industry.

A new cold spraying technique developed at Monash restores the structural integrity of corroded and degraded metals to improve the safety and extend the life of civil and military aircraft and civil infrastructure.

This technology can also be used to manufacture highly durable, lightweight parts for:
- Military and civil aircraft
- Rail industry
- Aerospace industry
- Defence industry
Our people

Professor Chris Davies
Chris’ research involves taking advantage of electron microscopy, X-ray diffraction and large-scale forging and rolling mills to model metal manufacture and develop new ways in which to design metals for new applications.

Associate Professor Christopher Hutchinson
Christopher’s research concerns the processing and properties of engineering alloys (steels, aluminium alloys, copper and brass titanium alloys, and magnesium alloys).

Dr Iqbal Gondal
Iqbal has expertise in remote condition monitoring for industrial processes, process modelling, industrial communication networks, machine fault analysis, residual life prediction and wireless sensor networks.

Professor Kate Smith-Miles
Kate is a consultant to industry in the areas of optimisation, data mining and intelligent systems.

Associate Professor Cordelia Selomulya
Cordelia’s group has developed a fabrication method for producing powders with better functionality and ease of handling for the food and therapeutics industry.

Associate Professor Karen Hapgood
Karen’s mission is to bring pharmaceutical manufacturing processes into the 21st century by testing new technologies to reduce waste and speed up delivery.

“Maths holds the key to cracking open these and other real world problems. The detail might be different for each company, but the mathematical statement of the problem is very similar.”

Professor Kate Smith-Miles

Smart drying
The dairy and pharmaceutical industries in Australia and overseas are utilising the Single Stream Spray Dryer developed at Monash to manufacture new products more efficiently.

To remain competitive the dairy industry is developing new products including high protein milk and fortified baby formula. The diagnostic tool assists dairy manufacturers by providing a systematic study on the effects of drying for milk formulations. Other examples include the use of spray drying to encapsulate fish oil and for crystallisation of amino acids.

The technology has been advanced through a China-based company in Jiangsu to turn it into commercial equipment and has now been adopted by the French National Institute for Agricultural Research for dairy powder research. Similar technologies have also been used by several Chinese companies such as KingdomWay group in Xiamen, China.

Applications:
- Designing different matrix materials for drug encapsulation and controlled release
- Diagnostic tools for new milk powder formulations
Materials development is essential to technological advancement. Monash researchers are discovering new materials and finding cost effective ways to manufacture them for advanced applications.

**Polymers**

Technological improvements in polymers make them the material of choice for many manufactured products due to their low cost, light weight, ease of manufacture, high performance and design flexibility. Polymer research at Monash includes:

- Characterisation of polymers and their nanocomposites
- Self-healing coatings
- Graphene based polymer gels
- Conductive polymers
- Biomaterials/biosurfaces
- Polymer hydrogels
- Photo-reversible polymers

**Applications:**

- Protective coatings
- Coatings for motor vehicles and ophthalmic lenses that self-repair
- Fully recyclable plastics, dissolvable adhesives, controlled release films and photo-degradable band-aids for wounds, all based on photo-reversible polymers
- Energy storage and conversion devices
- Smart membranes
- Biomedical applications
- Photonics and optoelectronics
- Biosensors

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**Our people**

**Professor George Simon**

George works in the area of nanostructured materials and polymer engineering. His interests include biomimetic-type materials, such as used in self-healing polymer systems.

**Professor Dan Li**

Dan is focused on developing innovative concepts to address the key scientific/technical challenges relating to scalable synthesis, processing and assembly of graphene-related materials.

**Professor Michael Fuhrer**

Michael is an Australian Research Council Future Australian Laureate Fellow. Michael’s research interests include the properties of carbon nanotubes and elucidating the mechanisms which govern electronic conduction of graphene.

**Professor Yi-Bing Cheng**

Yi-Bing’s research includes nanostructured titanium dioxide-based dye sensitised cells and ceramic materials and composites.
Nanomaterials and nanotechnology
Monash is a recognised leader in nanomaterials research, and is developing a number of products and manufacturing solutions in fields such as:
- The bionic eye
- Green materials for consumer products and healthcare
- Next-generation aerospace metals
- High-performance solar cells
- Smart materials for medical diagnostics
- Hybrid car fuel cells
- Advances in brain, spinal cord and cardiovascular repair
- Advances in graphene based optoelectronics

Corrosion
The discovery of novel mitigation protective surfaces on lightweight alloys improves the durability of materials and structures. Applications include:
- Monitoring and mitigation of corrosion and assisted-cracking of steel and light alloys
- Corrosion protection (functional coatings, graphene and silane coatings)
- Corrosion and its mitigation in civil, aerospace automotive, mining and biomedical structures

Ceramics
Advanced ceramic materials are being developed for a range of structural and functional applications, including:
- Solar cells
- Fuel cells
- Renewable energy
- Fire performance cables
- Gas sensors
- Biomedical devices
- Separation membranes

Optoelectronics
Advances in graphene based optoelectronics for a range of applications, including:
- Tuneable fibre mode locked lasers
- Photo detectors
- Optical modulator and polarisation controllers
- Photomultipliers

Dr Kei Saito
Kei is developing novel sustainable and environmentally benign materials based on the principles of green chemistry.

Professor Patrick Perlmutter
Patrick’s research interests include new self-assembling materials, new medicines for cancer, cardiovascular and neurodegenerative disease as well as new surface acoustic wave-based reactors.

Professor Milton Hearn
Milton has been instrumental in expanding the field of green chemistry at a national and international level. He also actively promotes greener manufacturing processes for the chemical, pharmaceutical and food industries.

Professor Douglas McFarlane
Doug is an Australian Research Council Australian Laureate Fellow. His research includes work on hydrogen energy from water splitting, thermoelectric cells, advanced battery science and ionic liquids for sustainable manufacturing processes.
Delivering impact
Supporting greener manufacturing

Greener manufacturing is being encouraged through the establishment of the Victorian Centre for Sustainable Chemical Manufacturing (VCSCM).

The centre is led by Monash University in partnership with CSIRO, the Plastics and Chemicals Industries Association and the Environmental Protection Authority and will be housed in the Green Chemical Futures building.

VCSCM will assist industry in evaluating and deploying more sustainable manufacturing processes and capture the benefits of green chemistry for the production of existing and new products.

Professor Milton Hearn of VCSCM said the centre represents an important step in the creation of more effective partnerships between research institutions and industry.

“This new centre provides a major opportunity to support Victorian and Australian manufacturing industries and other companies to become globally more competitive with skilled workforces.”

VCSCM builds upon the work done by the Centre for Green Chemistry over the past decade.

Green chemistry has introduced game changing methods for synthesising high value products from materials that would otherwise be treated as industrial waste.
“This new centre provides a major opportunity to support Victorian and Australian manufacturing industries and other companies to become globally more competitive with skilled workforces.”

Professor Milton Hearn
The manufacturing industry is using innovative technologies developed at Monash to improve productivity and global competitiveness.

Robotics and mechatronics
Increasing the use of robotic devices in manufacturing improves productivity and supports industry growth.

Applications for robotics:
- Flexible manufacturing and assembling across a wide range of industries
- Process control
- Quality assurance inspections
- Real-time testing (electronics and medical devices)
- Medical device industry (manufacturing, assembling and testing precision parts, prosthetics, rehabilitation and training, drug handling)
- Surveillance systems in law enforcement and defence

Delivering impact

GSK
To promote pharmaceutical manufacturing in Australia a unique partnership was formed in 2008 between the Victorian State Government, Monash and GSK in Boronia. A business plan was developed for a jointly-funded centre; The Australian Pharmaceutical Centre for Innovation and Industrialisation (CO2I2) which links the scientific staff at Monash Institute for Pharmaceutical Sciences Parkville campus with a parallel team of production specialists at Boronia.

A practical response to this potential downsizing which included streamlining manufacturing processes, expanding the product portfolio and employing the best people.

"[GSK] knew that they were going to struggle unless they could reinvent themselves with a relatively high-technology new product pipeline," said Dr David Morton, Associate Professor at the Monash Institute for Pharmaceutical Sciences (MIPS).

Australia has to be value-adding. We can't just be turning out things that our competitors can do more easily and cheaply."

With the support of the Monash collaboration this strategy has worked. Over the past three years, the GSK site at Boronia has focused its core capabilities of producing low cost unit dose dry powder inhalers and innovative Blow-Fill-Seal products with the aim to export these to emerging markets.
Augmented reality
Augmented reality combines computer vision and 3D sensing to overlay computer generated imagery on the real world.

Applications:
- Design manufacturing facilities
- Provide work instructions for manufacturing activities
- Troubleshoot in a complex manufacturing environment
- Record images of manufactured parts for quality management audits

The Monash Wind Tunnel
Monash has world-class aerodynamic research and development capabilities and facilities. Aerodynamic and acoustic performance is vital to many products across a range of industries.

Industry and researchers can access these services for design, validation or verification. Aerodynamics is an important attribute of any product that is exposed to the wind environment.

The Monash Wind Tunnel offers testing and consulting services to the construction, automotive, sports and wind energy industries. It provides the only full-scale automotive aerodynamic test facility in Australia.

Solar cells
Monash researchers are conducting world class research on photovoltaic technologies that will revolutionise the way solar power is produced.

They are developing Dye Sensitized Solar Cells and Organic Solar Cells, photovoltaic devices that could replace silicon solar cells.

Advantages include:
- Lower cost to manufacture
- Light weight
- Able to be bulk manufactured by a simple printing process
- Adaptable to curved surfaces

Our people

Professor John Sheridan
John’s research into fluid mechanics will help to reduce fuel consumption and carbon emissions.

Dr Chao Chen
Chao’s research interests include robotic design, kinematics, dynamics, and transmission.

Professor Bill Charman
Bill is the Director of the Monash Institute of Pharmaceutical Sciences and is an internationally respected leader in drug discovery, drug delivery and drug development.

Professor Tom Drummond
Tom’s research in the field of real-time computer vision has applications in augmented reality, robotics, assisting technologies for visually impaired users as well as medical imaging.

“Australia has to be value-adding. We can’t just be turning out things that our competitors can do more easily and cheaply.”

Dr David Morton, Monash Institute for Pharmaceutical Sciences (MIPS)
**Delivering impact**

**Monash Vision Group**

An ambitious plan to implant a bionic eye by 2014 has brought together a unique partnership between scientists and engineers at Monash and industry. The Australian Research Council (ARC) funded Monash Vision Group (MVG) project is a collaboration between Monash University, Alfred Health, MiniFab and Grey Innovation, to develop and manufacture a direct to brain cortical prosthetic prototype device.

MVG’s system combines state of the art digital and biomedical technology with ordinary glasses. A digital camera embedded in the glasses captures images that are then processed and wirelessly transmitted to 7 to 11 tiles that are implanted in and stimulate the primary visual cortex of the brain.

The implant will supplement remaining natural vision, giving hope to up to 85 percent of people with currently untreatable clinical blindness.

MVG’s General Manager Dr Jeanette Pritchard, said getting back even a little bit of vision will make a huge impact.

Producing a prototype device would have been stalled without Grey Innovation’s involvement.

Monash had faced difficulty in engaging a foundry to manufacture the microchip.

“Large industry doesn’t always like dealing with universities. Through existing links, Grey Innovation contacted an international foundry to manufacture the MVG microchip. Without them it may not have happened,” Jeanette said.

While for Grey Innovation’s Managing Director, Jefferson Harcourt the partnership has meant gaining access to high-quality research.

“Without Monash we would not have been able to get such a complex project on foot and funded,” he said.

Jeanette said the project is a great example of a model that should be more widely employed to ensure research is translated to commercial outcomes.

“We have achieved so much already in such a short period of time.”

This success Jeanette credits to the regular and close interaction amongst partner organisations.

MiniFab Director and Chief Executive, Dr Erol Harvey agrees that the diversity of the team has been a key success.

“Each participant brings unique skills and capabilities to the consortia without which the project would not be possible, at least not within the very tight timeframe and budget available.”

**Our people**

**Dr Jeanette Pritchard**

Jeanette’s objective is to bring hope to many people worldwide with untreatable clinical blindness, by successfully and effectively managing the development of the MVG ‘direct-to-brain’ bionic eye.

**Professor Nemai Kamarkar**

Nemai has pioneered chipless RFID’s and RF sensors for a range of applications including polymer banknotes, library access cards, and wireless monitoring of humidity and temperature of tagged objects.

**Professor Arthur Lowery**

Arthur is an engineer in telecommunications systems and bionic vision. He founded VPsystems and Ofidium and currently leads Monash Vision Group.

**Professor Sunita Chauhan**

Sunita’s research interests include medical/surgical robotics and computer assisted and integrated surgery.
Delivering impact

Printable RFIDs

Professor Nemai Karmakar and his team at Monash have developed a technology that will revolutionise tagging systems.

His team has developed a suite of chipless RFID tags and readers that could replace printed barcodes and active chipped tags.

Nemai said the use of chipped RFIDs is limited by their high cost.

“We have overcome this problem by removing the chip so that they are fully printable, like optical barcodes, onto plastic or paper.

Chipless RFIDs can be made for less than 1 cent, which is well below the $1 it costs to make a chipped RFID,” he said.

Chipless RFIDs can store large amounts of data, are usable on metal products, are readable over greater distances and many tags can be read at the same time.

Nemai is excited about the potential for this world-leading technology.

“We have three commercialisation projects for chipless RFIDs on the go at present.

Commercial trials of polymer banknotes incorporating printed RFIDs are about to commence with our partner Securency,” Nemai said.

He believes the incorporation of chipless RFIDs into polymer banknotes will contribute significantly to reducing the global problem of counterfeiting.

The other two projects with FE Technologies involve using printable RFIDs for improved control of books in libraries and printable RFIDs for remote tracking of vehicle movements in alpine regions.

RFID technology can also be used in conjunction with sensors for wireless monitoring.

The Monash team is currently exploring the use of sensors in conjunction with chipless RFIDs to measure humidity and temperature, enabling the technology to be used in food packaging to monitor the condition of the contents.

Nemai said this technology could also be used in medical devices and for monitoring drug delivery to patients.
Accessing workplace training and development offered at Monash will equip the manufacturing industry with the skills to build a more efficient and productive workplace.

**Workplace learning and productivity**
In workplaces dealing with global change, human capital development needs to address intercultural relationships and communication.
Monash has conducted many successful leadership and workplace learning programs, including executive leadership, with government and private industry including Visy Industries and Nova Systems.

Learning programs include:
- Development of human capital
- Leadership, including organisational and executive leadership
- Workplace learning and skills development
- Train the trainer
- Coaching and mentoring
- Professional learning for global change

**Supply chain management**
Supply chain management has emerged as one of the primary factors in determining the competitiveness of manufacturing organisations.
In order to operate efficiently and effectively, organisations need to adopt global standards and integrate end to end business processes in their supply chains.

**Our people**

**Professor Terri Seddon**
Terri leads research and teaching that addresses learning and leading in workplaces dealing with global change.

**Dr Phil Riley**
Phil researches the overlapping space of psychology, learning and leadership. He is course leader for leadership and training programs.

**Professor Ian McLoughlin**
Ian’s research interests lie in technological and organisational change and the management of innovation. He has led and been involved in numerous research projects in the UK, Europe and Australia.

**Professor Amrik Sohal**
Amrik’s expertise is in operations and supply chain management. He has completed a number of projects relating to operations and supply chain management for the manufacturing industry.
Monash has expertise in analysing supply chains and in developing appropriate strategies aimed at developing competitive supply chains.

Applications:
- Understanding supply chain integration/management issues
- Identifying/mitigating supply chain risks
- Application of supply chain technologies
- Development of supply chain professionals’ competencies

Sustainable manufacturing
ClimateWorks Australia has substantial expertise in working with industry to identify opportunities for energy efficiency to improve productivity.

The independent, research-based organisation founded by Monash University and the Myer Foundation, conducted the Industrial Energy Efficiency Data Analysis project, to provide a comprehensive database of energy efficiency potential for the metals industry and other sectors.

Other projects include:
- The Carbon Decision Making and Risk Management tool to enable businesses to best manage and mitigate their carbon liability
- Benchmarking industry best practice energy management and exploring energy efficiency across the supply chain and logistics sector

ClimateWorks Australia

The John Monash Innovation Institute (JMII) is driving a new approach to knowledge exchange between industry and Monash.

JMII is currently developing new and innovative courses designed to give businesses the skills needed to manage change and risk, to embed innovative capacity and develop the leadership necessary to prosper in an increasingly competitive environment.

The institute brings an industry facing approach, using local and international expertise through its global partnerships and a focus on real world challenges and solutions.

Professor Tony Lupton
As Director of the John Monash Innovation Institute, Tony has been developing innovative courses tailored to industry needs to improve the productivity and skills of business.

Meg Argyriou
Meg’s expertise includes industry engagement, precinct-scale energy and carbon solutions and carbon strategy development.
Monash has a strong, integrated network of world-class technology research platforms. These are made up of core centres and capabilities that provide high-quality specialist research services. See platforms.monash.edu

Key Partnerships and Precincts

The Australian Manufacturing Innovation Precinct
Headquartered in the New Horizons building at Monash University, the Australian manufacturing Innovation Precinct will be industry led and help drive the resurgence of the industry.

CSIRO and Monash University
The Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Monash University are working in partnership to further develop the Australian Manufacturing and Materials Precinct at Clayton through initiatives such as the new multi-disciplinary research facility, New Horizons Centre.

Melbourne Centre for Nanofabrication (MCN)
The MCN is part of the Australian National Fabrication Facility for nano-scale fabrication and integration. MCN provides Australia’s leading scientists and engineers with the tools to build miniature devices that could potentially revolutionise the healthcare and environmental maintenance sectors.

Australian Synchrotron
The Australian Synchrotron is a leading third-generation synchrotron facility used for detailed characterisation of materials at the sub-microscopic level to optimise performance and properties. It can be used in a range of manufacturing applications including: metal alloys, polymers and plastics, coatings and ceramics.

Monash Centre for Additive Manufacturing
The Monash Centre for Additive Manufacturing (MCAM) forms an integral component of the Clayton precinct’s advanced manufacturing capabilities providing world-class infrastructure, expertise and collaborative opportunities. Researchers at MCAM take fundamental research from a broad range of disciplines and apply them to manufacturing challenges. These disciplines include material science, alloy design and processing, surface engineering, corrosion and hybrid materials.

Monash eResearch Centre
In partnership with researchers and the precinct, MeRC provides ICT facilities, operational and embedded expertise to lower the threshold to modelling, big data and the associated analytics. MeRC is a longstanding leader in ICT for innovation, with Australia’s first petascale data storage for research, and is presently integrating the concepts of data-storage, cloud computing and high performance computing under the one roof.
Centre for Drug Candidate Optimisation
The CDCO is an innovative collaborative research centre that provides ADME lead optimisation advice and support for emerging drug discovery programs within biotechnology and pharmaceutical companies and not-for-profit research institutes.

Equipped with state of the art instrumentation and employing highly qualified and experienced scientists, the CDCO offers contemporary methodologies to address key issues associated with candidate selection and progression from drug discovery to development.

Monash Centre for Electron Microscopy
The Monash Centre for Electron Microscopy (MCEM) is a $37 million facility offering first-class research and expertise in electron microscopy and atom probe microscopy.

MCEM is home to one of the most powerful electron microscopes in the world, the Titan 80-300. This is the highest resolution electron microscope in Australia and one of just a handful of such instruments worldwide.

Green Chemical Futures
Monash and the Australian Government are funding a new $78 million purpose-built research centre at Clayton as part of the Green Chemical Futures Initiative. The new facility will create new opportunities for research, training and collaboration and improve the capacity of the Australian chemical industry to respond to the challenges of the future.

New Horizons
The Australian Government funded New Horizons Centre has been purpose built to support multidisciplinary research. Over 400 scientists and researchers have been brought together to tackle major research challenges covering four themes:
- Modelling and simulation
- Renewable energy
- Medical engineering
- Future manufacturing