Innovation and Entrepreneurship Strategy 2018-2023
Murdoch has a respected reputation for translational research with a demonstrable track record of community uptake of the new knowledge created by its researchers. However, like many universities, it has been less successful at capitalising on its successes and has not realised the full value of its inventions and capabilities which contribute more than $2 billion to the Australian economy each year.

This document outlines the ways in which innovation will be fostered and translation processes embedded into the culture of the University over the next 10 years (2018-2023)

Key steps Murdoch University will take to generate interest in innovation and improve the translational pipeline from invention to implementation will include:

1. Creation of visible and accessible expert teams to support industry and academic interactions
2. The development of systems and frameworks that maximize awareness of our capabilities and inventions and matches these to external needs and opportunities
3. An ongoing program of education, including training, to foster entrepreneurial mindsets for emerging staff and students
4. Creation of a co-learning innovation hubs that are well connected to similar hubs locally, nationally and internationally
5. On-going review of staff KPIs to encourage engagement with the national innovation agenda
Definitions

**Innovation**
According to the great innovators throughout history, innovation happens when thinkers are free to connect the dots in new ways. Our challenge is to find creative ways to foster an environment where opportunities to be innovative abound; where new ideas are captured and developed, and where poor ideas are rejected before being over-invested in time, effort and resources.

A spirit of entrepreneurship – an energy that embraces change and a dissatisfaction with the status-quo – underpins an effective innovation ecosystem. Translating ideas or inventions into goods or services that create value, economic or otherwise, for the communities and stakeholders we serve, is the innovation model Murdoch University is striving to foster. Innovation can be big or small, but it has to make a difference – hopefully for the good.

There are two basic forms of innovation and entrepreneurship has a separate definition:

- **Incremental innovation**: enhanced need satisfaction and met expectations through procured Research and Development activity.
- **Productive Innovation**: The development and market introduction of a new, redesigned, or substantially improved, goods or services. Examples include product invention, or substantial enhancement by the inclusion of new components, materials or functions into an existing product.
- **Entrepreneurship**: The capacity and willingness to develop, organize and manage a business venture, along with any of its risks in order to make a profit.

**Innovation** success rarely occurs overnight. Innovation is predicated on three things: people, patience and persistence. For example: Vacuum cleaner innovator James Dyson took six years to secure a licence deal, and 14 years to get sufficient scale to justify a dedicated manufacturing facility.

**Invention and Entrepreneurship in Universities**
Entrepreneurs and universities typically do not go hand in hand. People with a doctoral degree represent the smallest group amongst entrepreneurs.

University Knowledge Transfer Offices rarely cover their own costs let alone create reliable income streams from the patents they file.

Whilst the best academics will be innovators, very few of them will have the skills of an entrepreneur. Conversely, some academics will not necessarily be highly innovative, but may excel at entrepreneurship. Put together or drawing from the wider local community, our aim is to create inventive teams capable of supporting existing businesses, creating new businesses and delivering new products and services.

Creating an ecosystem with the culture of innovation is our task, and our success will be measured not today, or tomorrow, but in the myriad ways we make a difference with everything that we do. Effective ecosystems are self-sustaining through responsible consumption, are self-supporting and adaptive, operate in balance, both internally and externally, and self-replenish. Our contribution as a whole must be greater than the sum of our parts.
The Research, Impact and Innovation Value Chain

Universities have for hundreds of years been internally balanced and adaptive, but often have failed to embrace the changing external environment. Today government expects more, and is asking universities to play active roles shaping innovation and impact beyond their internal environments. To demonstrate innovation and impact, universities must now show that they have effective frameworks to support broader community engagement as well as metrics to measure impact.

Figure 1 Illustrates the emergent Research, Impact and Innovation value chain at Murdoch University.

The value chain becomes a feedback-loop discussion where improvement in one aspect informs and reinforces other aspects.

- The value chain starts with those facets of the University generating the research, impact or innovation.
- Underneath them and arranged in rank order of importance are the facets of the University that act as enablers.
- The enablers provide the structures to ensure that knowledge is generated, captured, managed and used to support both the University and staff as partners in a national, international and, ultimately, a global enterprise.

The (Research) Income, Impact and Innovation value chain at Murdoch University
A Murdoch Case Study: Meat Standards Australia

Over a 25-year period Murdoch University researchers worked with meat producers and processors to improve the reliable production and assessment of meat nutrition, flavour and value. Supported by $24m of grants this case revealed that:

1) In developing a quality standard for beef and lamb in Australia, the researchers started from a position of understanding what the consumer wanted;

2) the University had supported the team over the period of the study by investing in successive Co-operative Research Corporations (CRCs) and by succession planning within the team;

3) The impact of the research was measurable in terms of the uptake of the standard in Australia; the value added to the industry ($400M per annum) and the internationalisation of the brand.

Murdoch’s contribution which has also been close to $24m in cash or in kind. Even a modest 2% royalty share of net income would have compensated the University for its contribution.

The lessons from the study are that:

1. Our research is highly innovative and capable of transforming an industry.

2. When that research is performed in close collaboration with industry partners, it does lead to incremental and productive innovation.

3. We need to ensure our future value is captured in a way that sustains further innovation.
A Murdoch University Innovation Strategy

PHASE 1: Key Objectives

To promote a culture of Innovation and Entrepreneurship six key objectives will be addressed.

1. Create visible and accessible expert teams to support industry and our people.
2. Develop systems and frameworks that maximise awareness of our capabilities and inventions and match these to external needs and opportunities.
3. Promote an ongoing program of education, including research, innovation and entrepreneurial training, that supports staff and students.
4. Build a co-learning innovation hub that is well connected to similar hubs locally, nationally and internationally.
5. Recognize and embed engagement, innovation, entrepreneurship and translation activities in staff training within the Contribution Development Reviews (CDR) and within the promotion processes.
6. Create an innovation fund for selective early stage investment.

These six objectives will be distilled into an Innovation Co-learning Hub (figure 2)
PHASE 2: Component Pathway

1: Up-skilling and Industry Engagement
Develop an ongoing education program for staff and students incorporating workshops and online learning tools to build the following knowledge, skills and behaviours (figure 3):

I. Understanding the needs of industry and how to talk to industry leaders\(^1\)

II. Understanding markets and identification of growth and development pathways;\(^2\)

III. Intellectual property, disclosure and protection. The roles and responsibilities of the individual and the organization\(^3\)

IV. How to build a team and pitch to an investor\(^4\)

1. III will be developed in 2018
2. II and IV has been addressed over the past two years via a one month program (Start Something) delivered by the Innovation cluster
3. At workshops, delivered by external experts and patent attorneys.
4. IV is embedded in The Centre for Entrepreneurial Research and Innovation (CERI) Concept to Creation

How to pitch to an investor

CERI Boot Camp
- Understanding your Market and Market Opportunities
- Talking to Industry
- Pitching Night

CERI Concept to Creation
- Building your team
- Refining your focus
- Developing a Plan
- Pitching to Investors

Effective Management of IP
- Intellectual Property, Disclosure and Protection
- The Roles and Responsibilities of the Individual and the Organisation
**Tools for Capturing, Managing and Exploiting Intellectual Capital**

**2 – Aligning GRD training with Australian Council of Learned Academics (ACOLA)**

Expand interactions with industry bodies and associations, especially those offering programs and support in the area of industry placements, secondments and mentoring.

Streamline industry engagement opportunities through establishment of agreement protocols that clearly state our position in relation to:

1. IP ownership
2. Publication of research
3. Our approach in relation to structuring agreements to achieve tax effective outcomes for industry

**3 – Market Intelligence**

Current Murdoch University staff and students awareness of skills and opportunities that have potential value to industry and community is patchy. Moreover, even when these intellectual resources are known, advertisement of the skills or opportunities and leveraging of investment is not coordinated. To maximize internal intelligence and leverage it against external opportunity, investment in the following systems are proposed (figure 4):

I. Creation of a user-friendly data collection portal to allow the submission and management of potential IP
II. Purchase of an online “match-making” tool to identify potential investors in our key technologies and capabilities
III. Construction of an appropriate support and advice network map to assist deep research and linking for more effective targeting and business viability

1. The tool of choice is IN-PART which matches off IP/Capability against 6000 potential industry partners
2. Digital first is now upgrading the Research landing page and a priority audience will be potential industry partners
4 – Expert Team Development
To support our people effectively, we will build visible and accessible teams with specific expertise and proven experience (Figure 5):

I. An innovation team with appropriate legal (patent) and commercial experience with domain expertise
II. A team of industry engagement advisers focused on elements of the Research Mandala
III. Consultants able to provide market intelligence as a guide to investment
IV. Experts seconded from industry
V. Entrepreneurs in residence
VI. At least one distinguished collaborator from a world leading innovation centre

1. A team of four people with experience in patent law, licensing and spin-out with domain expertise in Environmental Engineering, Biotechnology, Medical Technology and Agriculture eventually to become self-funded
2. A team drawn from Industry who will work with Institute Directors to win category 2 and 3 funds
3. Local and national consultants able to provide impartial advice on freedom to operate, competitor analysis and market value
4. One consultant appointed on an annual basis from a “focus industry” with a remit to connect Murdoch with international industry leaders
5. Local Entrepreneurs selected from our alumni and appointed for a day a week to provide students and staff with mentoring support
6. The collaborator selected from a successful innovation center to assist Murdoch University in establishing an expanding and self-sustaining innovation hub

Providing Expertise – an expert team framework
5 – A Co-Learning Innovation Hub

To maximise their effectiveness, the education programs and expert teams will be served by an Innovation Hub in a visible, central location (figure 6). The Hub will provide:

I. Drop-in space to meet the innovation team and the entrepreneurs in residence

II. A space with information/exhibits showcasing Murdoch University capabilities to potential industry partners

III. Working spaces to allow team building drawing from resources across the University

IV. Working spaces for start-up business activities

V. A virtual collaboration space to allow the Murdoch Hub and other spin-out activities to easily interact

1. Meeting spaces where inventors can build teams to support their enterprises. Eventually it is envisaged that the Business School can provide the core of this expertise

2. Typically, open plan computer space with access to meeting rooms

3. Many investment opportunities will lie in Singapore and the Emirates. Therefore, effective communication through SCRIPT will be essential
6 –Steps to Realising the Opportunity Investment

To establish appropriate governance around investment the following will be established (figure 7):

I. An early stage ($10 - $50K) investment fund to develop approved projects

II. Clear guidance criteria for the approval of early-stage and mid-stage investments

III. An investment committee to triage opportunities and provide assurance to the Vice Chancellor and Senate

IV. A mid-stage investment fund that WILL leverage Commonwealth investment (Industry Growth Centre or AusIndustry) matched funding sources

1 Early stage funding might support intellectual property protection or fund further research. Approval of funding will be within the delegation of the Director of R&I but on the advice of the committee

2 Likely membership is the Director of R&I, The Manager of the Innovation Hub, A Member of Finance, A Member of Legal, The Dean of the Business School, Two members of Senate with Commercial and Investment Experience

3 Mid stage investment will be within the delegation of the DVCR&I but on the advice of the Investment Committee

4 The size of the investment fund will be ~$500K per annum initially
A Murdoch University Innovation Strategy

PHASE 3: Incentives

7 - Embedding Innovation
To promote engagement a clear performance reward pathway will be established.

The University commercialisation policy will be extended to promote the following:
1. A career promotions pathway, clearly linked to the National Innovation and Science Agenda, that recognises activities in addition to category 1 funding and publication quality
2. A workload model that includes consultancy as an important use of staff time
3. Seamless administrative processes that make the prosecution of small contracts straightforward
4. A system of remuneration that protects the University’s reputation, whilst allowing academics to benefit directly from consultancy income
5. A Graduate Research Degree (GRD) training program that recognises the ACOLA principles of Industry engagement, internships, and industry-based supervision

8 - Deliverables
Four major deliverables, illustrated below (Figure 7), are expected to arise from the innovation strategy during the next five years. These are in ranked order of value to the University. The most tangible short term return on investment will be an increase in engagement income that will emerge through better industry engagement. Lagging slightly behind but of equal importance will be the alignment of our GRD training programs with the ACOLA principles. The most tangible return on investment will be the industry readiness of our doctoral graduates. Realising, protecting and exploiting Murdoch IP in systematic and consistent way will occur immediately but financial returns are unlikely over a five year horizon.

Deliverable 1 - Increase in the amount of engagement income.
Engagement income (actual 2014 – 2017) and projected (2018 – 2022) based on a staircase model and assuming the enablers described above (figure 2 – 6). Note that although the Research Development Corporations (e.g. Grains Research Development Corporation) provide competitive category 1 funding they also represent Industry groups.

Note that Deliverables 1, 3 & 4 have been benchmarked against national data collections. Deliverable 2 will be benchmarked in the near future, so the actual percentages may change.
Deliverable 2 - Industry ready GRDs.

The percentage of GRDs at any one time being a) sponsored by Industry partners (blue), b) carrying out Industry internships of at least 6 weeks full-time equivalent (red) or c) being co-supervised by Industry adjuncts.

Deliverable 3 - Innovative behaviours

Innovative behavior will be measured by the numbers of academics disclosing inventions each year (red) based on the relative size of the organisation and assumes that disclosures will be triaged (based on market potential) before any patent is filed (green). Patents will in the normal course of events be licensed or optioned within eighteen months. Note we have assumed that in the course of licensing or optioning there will generally be a lag of six to seven years before royalty income is realised.
Deliverable 4 - University Spin-Out Activity.

Where licensing is not an option (e.g. a potentially productive innovation) the alternative of creating a company (blue) will be considered. In most instances this will be in collaboration with an investment partner, who will take responsibility for product development, marketing and sales. The University will hold equity in the company and may have board representation (red). Income from sales or dividends is unlikely in the first five to ten years of a company (green).