ATSE

ATSE INTERNATIONAL WORKSHOP SERIES
SYDNEY, 17-18 MAY 2011

Strengthening Links Between Industry and Public Sector Research Organisations

REPORT

Australian Government
Department of Innovation
Industry, Science and Research

Supported by the Department of Innovation, Industry, Science and Research (DIISR), International Science Linkages, Science Academies Programme (ISL-SAP)

About ATSE

The Australian Academy of Technological Sciences and Engineering (ATSE) is an independent, non-government organisation, promoting the development and adoption of existing and new technologies that will improve Australia's competiveness, economic and social wellbeing, and environmental sustainability.

ATSE, one of Australia's four learned Academies, was founded in 1976 to recognise and promote the outstanding achievement of Australian scientists, engineers and technologists. It consists of some 800 Fellows, including 19 Foreign Fellows, drawn from the wide spectrum of the applied sciences.

The strategic priorities of ATSE are to:

- Provide a national forum for discussion and debate on critical issues of Australia's future, ensuring a valuable source of technological sciences and engineering based advice to government, academe, industry and the community.
- Improve education in the technological sciences and engineering through programs such as STELR (Science and Technology Education Leveraging Relevance) Project. This is a national secondary school science education initiative of ATSE.
- Promote technological sciences and engineering linkages globally and to foster technology transfer through its international program.
- Champion excellence in the technological sciences and engineering.

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ABOUT THE WORKSHOP

This Workshop was conducted using a grant from the Commonwealth Department of Innovation, Industry, Science and Research (DIISR) and held under the auspices of the Australian Academy of Technological Sciences and Engineering (ATSE). It was inspired by recent data from the OECD which confirmed that Australia is ranked nearly last among OECD nations in collaboration between industry and public researchers and, for Australia to be competitive in an increasingly knowledge-based global economy, this situation needs to be addressed. The Workshop drew together a group from industry, universities and government to discuss, recommend and initiate ways to strengthen links between industry and public sector research organisations, to strengthen collaborative links is, and to increase the level of innovation and productivity in Australia.

As an invitation-only event, it attracted 71 participants, not all of whom were able to be present on both days. The breakdown of participants was:

Industry	41%	Academe and PSROs[1]	24%
Government	15%	TTOs[2] , KCA[3] and AIC[4]	11%
Overseas representatives	4%	ATSE Staff	4%

There was a total of 18 speakers. Delegates were asked to provide individual written input on two occasions and joined in two breakout sessions held at the end of each day of the Workshop. Prior to the Workshop they were provided with a detailed Background Information paper in which both the Australian situation and that prevailing in overseas countries were explored. They were encouraged to provide a detailed analysis of the present situation in Australia and to suggest solutions for improving the level of collaboration between industry and public sector research organisations in Australia. The principal output of the workshop was a communiqué based on presentations and comments at the workshop.

1 Public Sector Research Organisations
2 Technology Transfer Offices
3 Knowledge Commercialisation Australia
4 Australian Institute of Commercialisation

Communiqué

This Communiqué reflects the views expressed by delegates to the Workshop. Following the Workshop, a draft Communiqué was developed based on the presentations and comments made at the Workshop. Delegates were then invited to comment on the draft; comments received were considered in developing the final Communiqué.

SUMMARY

- Current research suggests that the innovative potential of a nation is not directly proportional to its spending on R&D. The absorptive capacity of industry is a key determining factor in adequately capturing the outcomes of public sector R&D, with trusted intermediaries on both sides having important roles to play. Studies show that a much greater value for business arises from direct collaboration with staff in Public Sector Research Organisations (PSROs) rather than from perusal of academic outputs in journals and the like. In terms of extent of industry-PSRO collaboration, Australia ranks near the bottom of the OECD league table.

- Doubling the level of Australia's industry-PSRO collaboration would yield a significant innovation dividend but is seen as a stretch target requiring policy change. In this regard overseas countries have implemented a number of useful policy frameworks which can provide guidance to Australia. Australia needs an articulated policy which shows how research excellence at one end links to the rationale for generating impact from this at the other. No magic bullet is available, but the aim must be to get more recognition of "D" into universities and appreciation and receptivity of "R" into industry.

- CRC, ARC Linkage, Enterprise Connect and Commercialisation Australia are all initiative in the right direction but are under-resourced. Much simpler, more nimble (and more rapidly implemented) schemes are needed. It is desirable to give industry partners a greater role in project management and in some cases to make non-repayable grants directly to industry.

- Transaction costs of collaboration are too high. Legal complexities between industry and PSROs need to be simplified. They are presently too dominated by risk avoidance.

- Research organisations will work on activities which get measured and rewarded. As universities are not really rewarded for collaboration, the funding formula has to change to specifically reward collaboration. ERA in its present form is unlikely to change the amount of collaboration or the innovation dividend. The introduction of some targeted schemes at around two to three per cent of total R&D funding (such as Third Stream funding and/or Knowledge Transfer Partnerships – as in the UK) would drive positive behaviour in universities and industry.

RECOMMENDATIONS

It is recommended that:

- Mechanisms be put in place to capture the benefits of research and to direct research to problems of national importance including the support of those industries providing employment to Australians, especially emergent industries that will generate the next wave of employment
- Government, through its Compact Negotiations with universities, actively seeks to change their culture towards greater collaboration with business and industry, especially in appropriate disciplines, and to encourage a top-down embrace of collaborative innovation.
- Government introduces additional funding, such as third-stream funding to reward institutions that are effective in collaboration. UK experience suggests that the level of this funding would need to be three to five per cent of total funding to have a significant cultural impact. To this end, the possibility of claw-back and redistribution of institutional income should be contemplated. A framework will need to be developed to assess the quality and magnitude of such collaboration.
- As an alternative, Government reconfigures ERA in appropriate disciplinary areas to measure and pay attention to the innovation dividend accruing from publicly funded research, carrying this aspect forward to any ERA-based funding model.
- Government explored the option of industry associations playing a greater educative role in improving the knowledge responsiveness of SMEs and of being promoters of pre-competitive research – with the possibility of supportive funding for such activities being provided. Industry associations should also be encouraged to foster cross-sectoral engagements.
- Better ways be found of making industry aware of what expertise is available in PSROs and making PSROs more aware of industry needs. Uniquest offers an effective information transfer model.
- Government works with the Venture Capital industry to rebuild funding opportunities for early-stage innovations
- Government encourages superannuation companies, including UniSuper, to set aside a small proportion of their members' funds to support the early stage development of promising technology.
- Current Government schemes be augmented and supplemented by new schemes if collaboration targets are to be met
- Government considers that there is a strong case for a more nimble, more industry-focused Linkage Grant or mini-CRC scheme which has the flexibility of rapid award, variable project length and industry-based research goal setting and management. Maintaining accountability and probity while reducing the running cost of the scheme would also be useful to explore.
- Government through DIISR to consider a Commonwealth-wide adoption of the (NSW, QLD and SA) voucher system for SMEs to purchase the research expertise of PSROs
- Certain of the beneficial features of the UK Knowledge Transfer Partnerships (KTP) scheme and the U.S. Small Business Innovative Research (SBIR) scheme be profitably employed in new or revised Australian funding programs. These include greater involvement of the industry partner in setting the research agenda and the possibility of payment of Government funds direct to firms.
- Preferential allocation be given (as in the US) in existing government funding programs for industry R&D where there is demonstrable collaboration between industry with PSROs
- Government, in concert with Universities Australia and industry organisations, such as AIRG, explores how the TTOs of Australian universities can be made more effective, both as knowledge transfer agencies and as training grounds in the innovation process. This process could involve proposing amalgamations and providing part funding for TTOs based on university success in collaborative research, effectiveness of training and bringing research through to commercialisation.
- A policy stable environment be developed for innovation-stimulating initiatives in the interests of ensuring a policy continuum to foster long-term collaborative relationships between industry and PSROs and that bipartisan support.

1. THE INNOVATION DIVIDEND FROM PUBLIC SECTOR RESEARCH

Delegates noted the current international concern about the real payback from publicly funded research (Innovation Dividend and the Swedish Paradox)[5]. Speakers indicated that good basic science and invention did not necessarily lead to innovation that would raise the productivity of a nation with the linear model now being substantially discredited. For good science to be applied required that industry knowledge receptors were in place. Knowledge itself is cumulative and additive, while innovation is combinatorial. Recognising this means that the processes for capturing the outcomes of public sector research are necessarily collaborative and interdisciplinary. Innovation capacity needs to be improved in Australian industry so that the fruits of R&D become "sticky" instead of rapidly going overseas.

- The level of spending on public sector research does not necessarily guarantee a nation's pre-eminence in innovation and rhetoric **on all sides** should acknowledge the importance of innovation as a determiner of national productivity and foster policies to maximise it.
- Mechanisms should be put in place to capture the benefits of research and to direct research to problems of national importance including the support of those industries providing employment to Australians, especially emergent industries that will generate the next wave of employment.

2. COLLABORATION AS A KEY DRIVER FOR KNOWLEDGE UPTAKE

It is widely recognised internationally that effective collaboration between PSROs and industry is essential for capturing the innovation dividend. Overseas countries, especially in Europe and Asia, have put in place Government-sponsored programs to promote collaboration and offered grants and rewards to organisations that progress this. By international (OECD) standards the collaboration between public sector research organisations and industry in Australia is poor. Ways to improve the situation are required. It is noted that the Minister has put forward a target of doubling the level of collaboration by 2020. Delegates felt that this was a stretch target which would require significant policy change to attain.

- Australia must raise its level of industry-university collaboration.
- Doubling of the present level by 2020 is seen as an aggressive aim set by Government and will require additional policy initiatives.

3. AUSTRALIAN R&D CULTURE

Delegates confirmed that there was a gap between industry and PSROs. From an industry viewpoint collaboration with PSROs was hampered by:

- Questions of ownership of intellectual property (IP);
- Often entirely unrealistic valuation of the IP by the PSRO;
- Timeliness of research outcomes;
- Inadequate industry involvement in goal setting; and
- Issues arising from the PSRO's wish to publish results.

5 "Innovation Dividend" refers to the return to the national economy by way of productivity improvements as a result investment in R&D. "Swedish Paradox" refers to the phenomenon prevailing in Sweden where a high investment in R&D has not led to commensurate benefits to the Swedish economy.

From the PSRO perspective, the absence of any significant financial stimulus or imperative to collaborate was an important barrier. Furthermore, universities in particular emphasise excellence of research in their business planning since, under processes such as ERA, this is a determiner of future government funding. Research excellence also leads to reputational enhancement which attracts fee-paying international students whose tuition fees now make up a significant portion of institutional incomes. Typically, universities do not have overt reward systems in place for academics who foster research collaboration. Other factors militating against collaboration include lack of mobility of researchers, insufficient experience by research students of the industrial R&D environment and inadequate support mechanisms (seed funding and venture capital) to take promising research through the "valley of death" to commercialisation.

- Government should, through its Compact Negotiations with universities, actively change their culture towards greater collaboration with business and industry, especially in appropriate disciplines, and to encourage a top-down embrace of collaborative innovation. The Government is encouraged to introduce additional funding, such as third stream funding to reward institutions that are effective in collaboration. UK experience suggests that the level of this funding would need to be three to five per cent of total funding to have a significant cultural impact. To this end, the possibility of claw-back and redistribution of institutional income should be contemplated. A framework will need to be developed to assess the quality and magnitude of such collaboration.
- As an alternative, the Government should reconfigure ERA in appropriate disciplinary areas to measure and pay attention to the innovation dividend accruing from publicly funded research, carrying this aspect forward to any ERA-based funding model.

4. KNOWLEDGE UPTAKE BY INDUSTRY

Delegates stressed that it was unrealistic to view industry and its ability to take up knowledge and form viable links with PSROs as homogeneous. Large industrial organisations generally had established mechanisms for this, though with the disappearance of corporate research laboratories (especially those of multinational companies) and the absence of Chief Technologists and the like at the senior executive level, collaboration was more likely to be initiated at operational levels and required a different approach and shorter output time frames than in the past. For SMEs the situation was different. These companies were not necessarily knowledge-receptive and mechanisms needed to be put in place to aid such firms. It was also stressed that the effectiveness of knowledge transfer varied considerably by industry sector. Australia has a particularly poor record of encouraging linkages between PSROs and SMEs. Universities

Attribute	Large company/ multinational	SME	VC/Start-up
Key reason for collaborating	Access to world class researchers "research excellence"	Access to applied research and incremental improvements	Technology licensing opportunity
Key impediments to collaboration	• IP ownership • timeliness of delivery	• IP ownership • Absorptive capacity • Relationship management effort • Lack of recognition of the potential value and relevance of university collaboration	• IP ownership • Time to manage relationship • Insufficient funding
Relative importance of TTO in facilitating collaboration, and its function	Low	Moderate • Who to talk to • How to connect	High • What is possible • What is available
Timeframe and deliverables	Short/medium/long • Research bodies of work	Short/medium • Actionable outcomes	Short (payback hurdle) • Prototypes ready for scale-up

find it time consuming to locate and collaborate with SMEs. Delegates saw benefit in the support of trusted intermediaries that brought parties together.

Important features of collaborative engagement from industry's perspective are summarised in the table. Discussion gave rise to a series of suggestions, some of which are given in the box that follows. Others are covered in later sections of the Communiqué.

- Industries of different size and technology sector have different abilities to uptake knowledge and participate in linkage-driven innovation. Schemes to promote collaboration must recognise this.
- The possibility of industry associations having an educative role to play in improving the knowledge responsiveness of SMEs and of being promoters of pre-competitive research should be explored by Government with the possibility of supportive funding for such activities being provided. Industry associations should also be encouraged to foster cross-sectoral engagements.
- Better ways of making industry aware of what expertise is available in PSROs and making PSROs more aware of industry needs are required. Uniquest offers an effective information transfer model. Interdisciplinarity needs to be encouraged. Collaborative companies need to be rewarded.
- Support schemes should be supported that have time frames equivalent to the time required to bring innovations to market.

5. EXISTING GOVERNMENT PROGRAMS

Delegates were generally disappointed by the discontinuance of the Commercial Ready program. Regarding other programs they commented:
Commercialisation Australia: The components of this program are considered useful but its scope and financial commitment are considered too limited at present.

R&D Tax Credit: Not yet passed by Senate but seen as potentially beneficial for SMEs. Jury is out on whether it will lead to a decline in R&D activity by large firms.

CRC Scheme: Lowering of funding in the 2011 Budget seen as a negative in what has been a useful scheme in promoting collaboration. Chance of success is too low to excite industry to be involved. Administratively cumbersome.

ARC Linkage Grant Scheme: Seen as currently too focused on the academic side of the house. Application and decision processes take far too long. Industrial partners frequently insufficiently involved in setting goals for managing research projects. The burden of finding matching funding is sometimes a significant problem for SMEs.

Venture Capital Schemes: No new funding has been provided by Government and existing VC firms are reaching the end of their lives[6].

- The Government is urged to work with the Venture Capital industry to rebuild funding opportunities for early-stage innovations.
- The Government should encourage superannuation companies, including UniSuper, to set aside a small proportion of their members' funds to support the early stage development of promising technology. These companies do invest in this asset class overseas, but this does not assist the development of Australian technology companies.

6 Subsequent to the Workshop the Minister has announced three more licences for VC firms, one of which is for a new manager with a $165M fund. The May Budget also announced a further $60M for a green energy VC.

Joint Research Engagement Scheme: This scheme has replaced the Institutional Grants Scheme for the block allocation of research funding to universities. A feature of the new scheme is its comparatively greater weighting for research income in the "Industry and Other" category. From the viewpoint of promoting collaboration this is a positive step.

Enterprise Connect: This and its embedded schemes assist SMEs in sourcing expert help in technology and general business matters. One embodiment is the Researchers in Business scheme which allows the placement of PSRO researchers in a firm for 2-12 months. While this program is supported by delegates, it is less generous in terms of required company contribution and less extensive in application than equivalent schemes overseas, notably the Knowledge Transfer Partnerships program in the UK and similar schemes in Europe. There the focus is on the development and implementation of collaborations in the absence of the ability of companies to do so unaided.

State-Based Schemes: Delegates were strongly supportive of the NSW Voucher Scheme for SMEs and the TechFast schemes of Queensland and SA. Extension to the national level and significant enhancement were considered desirable. However, it was noted that the funding provided under these schemes is relatively small and does not provide for substantial R&D – at best that for proof-of-concept demonstration (QLD).

Previous Schemes: Delegates noted that earlier grants under AusIndustry had a specific category for Collaborative Grants. These were effective as the commercial partner applied for the grant and sought an academic research group with the right skills. The commercial partner was the project manager. Industry delegates felt that this particular scheme had functioned well and was responsible for some notable Australian technology success stories.

Excellence in Research Australia (ERA): Delegates acknowledged the importance of research excellence in PSROs . But there was a general feeling that, in ignoring the innovation dividend (commercial outcome or impact) of PSRO research, ERA sends a signal to researchers that the key consideration is one of publishing in "top" (high citation) journals rather than seeking to collaborate with the private sector for national benefit. It may well be that the Government sees the present ERA process as the first step along the way of stimulating an innovative Australian economy. Step two is to log and reward beneficial researcher-industry collaborations to encourage good research and inventions to be transformed into innovations that have commercial benefit (as is currently being done in the UK). If this is so, the

- Current Government schemes need to be augmented and supplemented by new schemes if collaboration targets are to be met.
- There is a strong case for a more nimble, more industry-focused Linkage Grant or mini-CRC scheme which has the flexibility of rapid award, variable project length and industry-based research goal setting and management. Maintaining accountability and probity, while reducing the running cost of the scheme would also be useful to explore.
- Government via DIISR should consider a Commonwealth-wide adoption of the (NSW, QLD and SA) voucher system for SMEs to purchase the research expertise of PSROs.
- Certain of the beneficial features of the UK Knowledge Transfer Partnerships (KTP) scheme and the US Small Business Innovative Research (SBIR) scheme could profitably be employed in new or revised Australian funding programs. These include greater involvement of the industry partner in setting the research agenda and the possibility of payment of Government funds direct to firms.
- Government (as in the US) should give preferential allocation of existing government funding programs for industry R&D where there is demonstrable collaboration between industry with PSROs.

Government would be well advised to publicly state the importance it attaches to such collaboration. Also delegates recognised that collaboration and knowledge transfer may probably be more applicable to some disciplinary areas than others, although collaboration is often fostered by a multidisciplinary approach.[7] A number of delegates drew attention to the Small Business Innovative Research (SBIR) program in the US which promotes R&D in start-up companies. SBIR grants cover full costs and do not have to be repaid and transfer funds directly to the company.

6. TECHNOLOGY TRANSFER OFFICES

A number of delegates felt that Technology Transfer Offices TTOs were as much part of the problem of improving collaboration as an aid in solving it. Within universities they are considered as cash sinks, as the likelihood of a university obtaining significant income from the commercialisation of its IP is quite small. Within industry they are often seen as posing a major and undesirable hurdle in building a relationship with a promising academic researcher. Contract negotiations are often prolonged and the transaction cost is high.

While there is one view that TTOs should be supported directly by Government funding (this is one role for Third Stream Funding in the UK) there was the sense amongst the delegates that greater consistency of approach across TTOs would be beneficial. For example contracts should be simpler and made more uniform. Those at the Workshop speaking for TTOs indicated that the management of TTOs saw their role as changing towards a greater accent on making industry aware of what was available in the university and providing training for academics and business people in how to bring about efficient collaboration.

- Government in concert with Universities Australia and an industry organisation such as AIRG should explores how the TTOs of Australian universities can be made more effective, both as knowledge transfer agencies and as training grounds in the innovation process. This process could involve proposing amalgamations and providing part funding for TTOs based on university success in collaborative research, effectiveness of training and bringing research through to commercialisation.
- A concerted effort must be made nationally to reduce the transaction costs in developing contracts between industry and PSROs with potential Government support to an organisation like Knowledge Commercialisation Australia to scope and solve the problem through its membership working with industry.
- Government and industry should champion the development of a proof-of-concept metric as an aid to quantifying innovative activity
- Government should provide in compact negotiations the possibility for some universities to opt out of IP ownership in return for their participation in supported regional Centres of Expertise.
- Government should ensure that industry is deeply involved in the formulation and management of research projects that receive Government funding under programs that support collaboration.

7 Following the Workshop it has been announced by Minister Carr that journal rankings A*, A, B, C will no longer be used by the Research Evaluation Committees in assessing the quality of research. Attention will now be paid to publications in those outlets most commonly used by the particular discipline. The Minister has indicated that this will give greater capacity to ERA to adequately capture applied and interdisciplinary research. (http://minister.innovation.gov.au/Carr/MediaReleases/Pages/IMPROVEMENTSTOEXCELLENCEINRESEARCHFORAUSTRALIA.aspx)

7. MINIMISATION OF CHURN

Delegates felt that the rapid turnover of innovation support programs, often over time frames matching Commonwealth electoral cycles, left many in industry and PSROs disinclined to seek support for useful projects and led to apparent policy inconsistency. The Workshop strongly endorsed the goal of seeking a bipartisan approach to innovation and research collaboration encouragement and noted the possibilities that the NBN provides in terms of collaborative opportunities.

- A policy-stable environment should be developed for innovation-stimulating initiatives in the interests of ensuring a policy continuum to foster long-term collaborative relationships between industry and PSROs and that bipartisan support be developed.

8. ROLE OF ATSE

Delegates held the firm opinion that ATSE should play a key role in advising the Government, industry and the academic world on ways to improve collaboration and lead to an enhancement of Australia's innovation potential. Value was seen in ATSE functioning like the UK Council for Industry and Higher Education (CIHE) in synthesising and developing policy on, for example, assessment and allocation of research funding, at a high level for submission to government.

- ATSE should offer to take on an advisory role in assisting the Government to improve the level of collaboration between industry and PSROs.

For further information visit international programs at www.atse.org.au

PROGRAM

DAY ONE
TUESDAY 17 MAY 2011

08:30 Registration and morning coffee

Opening Plenary Session
Chair: Professor Robin Batterham AO FREng FAA FTSE

09:00 **Welcome to Delegates**
Emeritus Professor Mary O'Kane FTSE
Chief Scientist and Scientific Engineer, New South Wales
09:05 **Opening Address**
Professor Robin Batterham AO FREng FAA FTSE
President, ATSE
09:15 **Professor Paul Greenfield AO FTSE**
Chair, Go8
Vice-Chancellor, The University of Queensland
Strengthening Links between Industry and Public Research
10:00 **Professor Philip Ternouth**
Associate Director for R&D and Knowledge Transfer
Council for Industry and Higher Education
UK Industry-University collaboration and its effective promotion
11:00 Morning Tea

Session Two
Chair: Emeritus Professor Lesley Parker AM FTSE

11:30 **Dr Jim Patrick FTSE**
Chief Scientist, Cochlear Limited
Why Cochlear is committed to collaboration
12:15 **Dr Alastair Hick**
Vice Chair, Professional Development
Knowledge Commercialisation Australia
Director Commercialisation, Monash University
What business needs and how to get it
13:00 Networking Luncheon

Session Three
Chair: Dr Bob Frater AO FAA FTSE

13:50 Participant Discussion
Chair: Professor Ron Johnston FTSE
14:00 **Professor Hugh Durrant-Whyte FRS FAA FTSE**
CEO, NICTA
Collaborative Research models in NICTA
14:45 **Professor Liangchi Zhang FTSE**
Scientia Professor & Australian Professorial Fellow, UNSW
Effective Industry-University collaboration in Asia: Lessons for Australia
15:30 Afternoon Tea
15:45 **WORKSHOP SESSIONS**
Four Breakout Groups discussing various themes
16:45 Leaders from Breakout Groups report back

Session Four
Chair: Dr John Bell FTSE

17:00 Overview of Day's deliberations
17:30 **Conclusion of Day One**
19:00 **NETWORKING DINNER**
Guest Speaker: Dr Terry Cutler FTSE
Principal, Cutler & Co
The Imperatives Driving Collaboration

DAY TWO
WEDNESDAY 18 MAY 2011

Session Five
Chair: Mr Peter Tyree FTSE

09:00 **Mr Ken Pettifer**
Division Head of Innovation, Department of Innovation, Industry, Science & Research
Government initiatives for industry-university collaboration and the flexibility to introduce additional incentives
09:30 **Dr Katherine Woodthorpe**
Chief Executive Officer, Australian Private Equity & Venture Capital Association Ltd
Interaction of Universities and Industry - Commercialisation of university research through Venture Capital investment
10:00 **Professor Les Field FAA**
Deputy Vice-Chancellor (Research), The University of New South Wales
In an Ideal World
10:30 Morning Tea

Session Six
Chair: Dr John Best

11:00 **Dr Wayne Stange**
Chief Executive Officer, AMIRA International
Effectiveness of models such as AMIRA in promoting industry-university cooperation
11:30 **Dr Greg Smith**
Executive Director, SciVentures
Drawbacks to Industry-University Collaboration in the Australian environment
12:00 **Dr Alan Finkel AM FTSE**
Chancellor, Monash University
Entrepreneurship: Issues for start-up companies
12:30 Networking Luncheon

Session Seven
Chair: Professor Judy Raper FTSE

13:15 **Dr Rowan Gilmore FTSE**
CEO, Australian Institute of Commercialisation
Industry – Research Collaboration: The role of the intermediary
13:45 **Dr Anders Hallgren**
Director, Sydnovate, The University of Sydney
Powering a national innovation system - experiences from Sweden and Australia
14:15 Discussion
14:30 **Dr Klaus Lips**
Deputy Director, Institute Silicon Photovoltaics Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin GER & Visiting Professor, University of Sydney
Collaborative research in renewable energy in Germany – a basic researcher's view
15:00 Afternoon Tea
15:30 Workshop Sessions
Four Breakout Groups discussing various themes
16:30 Leaders from Breakout Groups report back

Session Eight
Chair: Professor Chris Fell AM FTSE

16:45 Reporting Back Session; identification of key issues and Action Plan
17:15 **Conclusion of Workshop**

ATTENDEES

Professor Robin Batterham AO FREng FAA FTSE
President, ATSE

Dr Travis Baroni
Research Manager, Alcoa

Dr Ashley Bates
Head of R&D Alliances, GlaxoSmithKline Australia

Dr Vaughan Beck FTSE
Executive Director - Technical, ATSE

Dr John Bell FTSE
Senior Associate, Allen Consulting Group

Dr John Best
Vice President, Technology, Research & Development, Thales Australia

Professor Philip Broadbridge
Head, School of Engineering & Mathematical Science, La Trobe University

Mr David Brown
Innovation Adviser, Minister for Innovation, Industry, Science & Research

Dr Fiona Cameron
Associate Director, Innovation, University of Western Sydney

Professor Christopher Cocklin
Deputy Vice-Chancellor (Research & Innovation), James Cook University

Dr David Cook FTSE
NSW Division Chair, ATSE

Dr Terry Cutler FTSE
Principal, Cutler & Company

Professor Graham Davies FREng
Dean, Faculty of Engineering, University of New South Wales

Mr Malcolm Donnell
Case Manager, Commercialisation Australia

Professor Gordon Dunlop FTSE
Executive Director, Business Engagement, University of Queensland

Professor Hugh Durrant-Whyte FRS FAA FTSE
Chief Executive Officer, NICTA

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Professor Chris Fell AM FTSE
Principal, Fell Consulting Pty Ltd

Professor Les Field FAA
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Chief Technology Officer, Better Place

Dr Cathy Foley PSM FTSE
Chief, Materials, Science & Engineering Division, CSIRO

Dr Bob Frater AO FAA FTSE
VP Innovation, ResMed

Dr Catherine Garner
Unlocking Innovation

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Queensland Chief Scientist

Dr Rowan Gilmore FTSE
Chief Executive Officer, AIC

Consul-General Hans Gnodtke
German Consulate-General, Sydney

Professor Peter Gray FTSE
Director - AIBN, University of Queensland

Professor Paul Greenfield AO FTSE
Vice-Chancellor, University of Queensland

Dr Anders Hallgren
Director – Sydnovate, University of Sydney

Mr Ron Hardwick FTSE
Group Technical Consultant, VISY Industries

Mr David Hind FTSE
Barefoot Power Pty Ltd

Ms Kathy Hirschfeld FTSE
Non-Executive Director, Snowy Hydro Ltd

Ms Lynne Hunter
Adviser - Bilateral Relations, European Union

Professor Archie Johnston FTSE
Dean of Engineering & Information Technologies, University of Sydney

Professor Ron Johnston FTSE
Executive Director - ACIIC, University of Sydney

Mr Duncan Jones
Chief Executive, Science Industry Australia

Emeritus Professor Frank Larkins AM FAA FTSE
Chief Scientist Energy, Dept of Primary Industries VIC

Dr Anna Lavelle
CEO, AusBiotech Ltd

Mr Peter Leihn
Office of the NSW Chief Scientist and Engineer

Dr Klaus Lips
Deputy Director, Institute Silicon Photovoltaics, Helmholtz-Zentrum Berlin für Materialien und Energie

Professor Mike Miller AO FTSE
Professor Emeritus, University of South Australia

Mr Ken Mirams
Managing Director Australia & New Zealand, Dow Chemical (Australia) Ltd

Mr Peter North AM FTSE
Director, Saluda Medical Pty Ltd

Professor Mary O'Kane FTSE
NSW Chief Scientist & Scientific Engineer

Ms Caroline Ostrowski
Senior Adviser - National Public Policy, Ai Group

Emeritus Professor Lesley Parker AM FTSE
Curtin University of Technology

Dr Jim Patrick FTSE
Chief Scientist, Cochlear Limited

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Deputy Vice-Chancellor (Research), University of Wollongong

Dr Peter Riddles
Board Member, Innovation Australia

Dr Merilyn Sleigh FTSE
Principal, InAvanti Life Sciences Consulting

Dr Greg Smith
Director, SciVentures Investments Pty Ltd

Dr John Soderbaum FTSE
Executive Director, ACIL Tasman

Dr Wayne Stange
Managing Director, AMIRA International

Mr Peter Tyree FTSE
President, Board Higher Education Round Table

Professor Philip Ternouth
Associate Director R&D and Knowledge Transfer, Council for Industry and Higher Education

Dr Ken Van Langenberg
Manager - Policy & Projects, ATSE

Mr David Varcoe
General Manager - Product R&D, Bluescope Steel

Mr Chris Vonwiller FTSE
Chairman, Appen Butler Hill

Professor Andrew Wells
Deputy CEO, Australian Research Council

Dr Keith Williams AM FTSE
Director, Glycan Biosciences Pty Ltd

Dr Katherine Woodthorpe
Chief Executive Officer, Australian Private Equity & Venture Capital Association Ltd

Professor Liangchi Zhang FTSE
Scientia Professor & Australian Professorial Fellow, University of New South Wales

Dr Paul Zulli FTSE
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ATSE's International Programs

ATSE's international program of missions, workshops and delegations, conducted with countries of strategic importance and in priority technology areas, together with support from specific grants and mid career exchange programs, is directed at strengthening Australia's access to global science, engineering and technology and to maximising the benefits of Australia's science base and its global linkages.

ATSE has strong bilateral relations with sister academies, international scientific and research bodies, and Government ministries in partner countries, providing a structure for joint activities and the exchange of information.

ATSE is also a member of the International Council of Academies of Engineering and Technological Sciences (CAETS) – an independent non-political and non-governmental international organisation, comprising 26 Engineering and Applied Science

Academies from Europe, the Asia Pacific region and the Americas. CAETS provides an effective forum for the consideration of technology-related issues of global significance and fosters valuable contributions to engineering and technological progress for the benefit of all nations.

Through ATSE's bilateral and multilateral relationships, ATSE administers a strategic program to address Australia's economic, social and environmental challenges through leveraging of Australia's investment in science and innovation.

The successful operation and implementation of the ATSE's international program would not be possible without the significant contribution of the ATSE Fellowship through: the International Strategy Group and ATSE Topic Forums which guide the overall international program; participation in missions, delegations and workshops; assisting ATSE staff in designing schemes and in selecting participants; and acting as Ambassadors (high-level contacts and assisting with visits) to participants in schemes such as the exchange of young scientists and emerging research leaders

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Strengthening Links Between Industry and Public Sector Research Organisations – Report

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