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Senator Ursula Stephens
Chair
Senate Foreign Affairs, Defence and Trade Legislation Committee
Parliament House
CANBERRA ACT 2600

Dear Ms Stephens

1. In my response of 20 June 2012, I undertook to advise you of the results of Defence's consultation with the university and research sectors on the Defence Trade Controls Bill 2011 (the Bill). As these consultations have now concluded, I am able to communicate Defence's perspective on the results of the consultations and the changes that Defence proposes that the Committee could consider making to the Bill. Throughout these consultations, Defence has continued to emphasise that acceptance of any changes is a matter for Government consideration following the consultative process.

2. The latest version of the Principles and Options document that formed the basis of this consultation is attached. This paper included four options that were derived in an iterative process from discussions with the university, research and industry sectors and assessments of whether and how each option would deliver export control objectives with a manageable level of risk.

3. The consultations have almost concluded, with no sector preferring the earlier Options 1 or 2. The university sector prefer a model based around Option 3 which excludes a larger portion of research from the controls, although members of the sector would prefer further exemptions in addition to those in Option 3. Defence industry strongly supports Option 4 as it parallels the tangible export permit controls that they are currently meeting and includes a domestic exemption which enables foreign employees to work in Australia without the need for a permit. The research sector has not expressed a preference for any option but asks that there is no discrimination against foreign people working in Australia and that regulation of research is kept to a minimum. Defence also prefers Option 4 for a number of reasons which are outlined below. It is unlikely that Defence and the university and research sectors will reach agreement on a preferred option and, as a result, consultation has moved towards the practical implementation of the legislation. Defence will provide Universities Australia (UA) with a response to address their latest concerns and explain Defence's intentions in relation to implementation issues.

University's preferred approach

4. The Option 3 model preferred by the university and research sectors exempts a wide range of research activity, being basic and applied research. This model would allow the unregulated transfer of sensitive controlled technology in the course of this exempted research. Defence tested this model in a number of scenarios, which are analysed in the attached Options Paper. The analysis concludes that basic and applied research has the same potential to involve the transfer of sensitive controlled technology as other categories of research, and that risk is not proportionate to the level of research being conducted. There is, unfortunately, no correlation between the level of research and risk. Low-level research can involve sensitive Defence and Strategic Goods List (DSGL) goods and technology, while high-level research can involve no DSGL goods or technology. Defence was also advised during the consultation process that it can be difficult to categorise research into the ABS classes of basic, basic strategic, applied or experimental development research, making this model difficult to implement. The Option 4 model recognises these risks and does not provide wider research exemptions.

5. The university sector has commented that Option 4 is a 'retrograde step' compared to Option 3. I would like to emphasise that throughout the consultation process, Defence adopted an iterative consultation process to develop each successive option. After Option 3 in particular, Defence analysed the feedback from the university, research and industry sectors, conducted more detailed policy analysis and modelling, and developed Option 4 after determining that Option 3 does not meet Australia's obligations under the Wassenaar Arrangement.

Defence's preferred approach

6. The Option 4 model adopts the UK model that UA advocated in its February submission and March testimony to the Committee. It focuses on higher-risk overseas transfers and reduces the level of regulation in other ways:

- removing controls for any supply of technology inside Australia;
- an exemption for supply of information that is 'in the public domain';
- an exemption for the supply of information in the course of 'basic scientific research'; and
- removing controls for any provision of defence services.

7. The level of regulation is further reduced by the narrow scope of technologies (information or software) associated with DSGL goods that are controlled. For many DSGL goods, the technology will only be controlled if it will enable the recipient to 'produce' or 'develop' the DSGL good. For fewer, more sensitive DSGL goods, the technology will be controlled if it will enable the recipient to 'produce', 'develop' or 'use' the DSGL good. This aspect of the DSGL controls is often misunderstood and Defence's outreach program will need to dispel the myth that 'All researchers who use DSGL goods in their research will need to obtain a permit'.

8. For example, a researcher employs a controlled substance, cholera toxin, in their cancer research. They can discuss with an overseas collaborator the nature of the research, how the cholera toxin is employed in the research and the results of their

research. It is only if the Australian researcher wants to supply the overseas researcher with the technology (e.g. formula or method) to 'produce' or 'develop' cholera toxin, the researcher would then need to speak to the Defence Export Control Office (DECO) to discuss whether they need a permit. For fewer more sensitive controlled goods, a researcher may also need a permit to supply an overseas researcher with the technology that would enable them to 'use' the controlled good.

9. Defence recommends to the Committee that Option 4 should be adopted for the following reasons:

- It implements Australia's obligations under the Wassenaar Arrangement to implement controls on intangible transfer of controlled technology;
- It is most consistent with the existing tangible export control model and therefore provides a more simple and common approach. It also reduces potential cost to businesses as they will not need to establish separate compliance systems for tangible and intangible controls;
- It emulates the UK intangible control model which was initially preferred by the university sector – although it should be noted that the UK has wider freedoms due to the nature of trade within the EU and the implementation of EU-wide regulations;
- It is the only option that recognises that due to a range of existing domestic security arrangements, the supply of technology within Australia presents a lower level of risk and accordingly, applies no controls on technology supplies within Australia. This option would allow foreign students to study in Australia or foreign employees to work in the industry, university and research sectors in Australia without a permit;
- It is the only option that recognises the heightened risk for technology supplies outside Australia and accordingly applies appropriate controls, with certain exemptions, to these supplies;
- There will be a significant reduction in the level of regulation due to the exemptions of technology that are "in the public domain" or supplied in the course of "basic scientific research". These exemptions would be consistent with the exemptions that are currently applied to tangible exports; and
- The narrow and specific nature of 'production', 'development' and 'use' technology controls in the Defence and Strategic Goods List (DSGL) mean that the level of control is far less than perceived in many sectors (see explanation in paragraph 7 above).

10. Defence understands that by not exempting a wider range of scientific research, Australian researchers who use DSGL goods will need to understand the controls contained in the DSGL. This obligation was acknowledged in the Wassenaar Arrangement's publication *Best Practices for Implementing Intangible Transfer of Technology Controls* (attached) which the Bill is implementing:

> *... "best practices" for the implementation of export controls over intangible transfers of WA-controlled technology [include] ... academic institutions that possess controlled technology ... designing and*

implementing internal compliance programs and appoint[ing] export control officers

Defence considers that it is important that researchers who use DSGL goods become familiar with the sensitive nature of the goods they are using and understand that while their research purpose may be for the public good, there are security risks posed by the controlled goods and the technology associated with these goods.

11. To implement Option 4 and address other aspects that have arisen during the course of consultation, if accepted by the Committee, the Bill could be altered by:

- making the Bill consistent with Australia's existing tangible export controls by:
    - removing controls on supplies of technology inside Australia;
    - removing controls for Australians located overseas who supply technology; and
    - applying controls to all supplies of technology from Australia to anyone outside Australia;
- including definitions for 'in the public domain' and 'basic scientific research' in the Bill and Regulations;
- removing controls on defence services; and
- including an additional control on publishing information where it will transfer controlled technology to the public domain.

Consistent with tangible controls - removing controls in Australia

12. As the Bill is currently drafted, any supply from an Australian person to a foreign person in Australia will require a permit. The Bill could be amended to remove this permit requirement as the risk posed by these domestic transfers is lower due to the following existing domestic security arrangements:

- all foreign people in Australia have undergone border control and visa screening processes and been found to be of sufficiently low risk to be allowed entry into Australia; and
- other domestic legislation serves to reduce security risks posed by domestic transfers of sensitive technology:
    - *The Weapons of Mass Destruction (Prevention of Proliferation) Act 1995* – this legislation contains a permit provision and prohibition power for any services provided in Australia or overseas that might assist a WMD program;
    - Defence Trade Controls Bill 2011 – there is the power to prohibit activity in Australia or overseas that would prejudice the security, defence or international relations of Australia;
    - *Autonomous Sanctions Act 2011* and Autonomous Sanctions Regulations 2012 – the provisions prohibit the supply of sanctioned

services for named activities to listed countries, organisations and individuals in Australia or overseas;

- *Nuclear Non-Proliferation (Safeguards) Act 1987* - regulates unauthorised communication of information in Australia or overseas relating to design, production, operation, testing or use of nuclear equipment, plant material or explosive devices;

- *Crimes (Biological Weapons) Act 1976* – prohibits the development, production and stockpiling of certain biological agents and toxins and of weapons in Australia or overseas ;

- *Chemical Weapons (Prohibition) Act 1994* - bans the development, production, possession or use of chemical weapons in Australia or overseas;

- *Crimes (Biological Weapons) Act 1976* – prohibits the development, production and stockpiling of certain biological agents and toxins and of weapons in Australia or overseas;

- *National Health Security Act 2007* – provides for information collection, secure handling, and monitoring/compliance measures for security-sensitive biological agents;

- *Crimes Act 1914* and *Criminal Code Act 1995* – legislative framework for activities contributing to terrorist activities in Australia or overseas;

- Codes of conduct for scientists promoting ethical conduct, for example:
    - Australia's Biotechnology Organisation's code requires its members to:
        - avoid conduct that will damage Australia's standing internationally;
        - observe all relevant obligations and standards of other countries where the industry is involved in biotechnology research, development or export; and
        - oppose the use of biotechnology to develop or produce any biological or other weapons; and
    - Australian Society for Microbiology's code requires its members not to engage knowingly in research for the production or promotion of biological warfare agents.

Consistent with tangible controls – removing controls on supplies by Australians overseas

13. As currently drafted, the Bill has an extra-territorial application that requires any Australian located overseas to apply for a permit to supply DSGL-listed technology to a foreign person located overseas. Industry consultation has emphasised that this will have the effect that Australians employed overseas will need to apply for a permit if their work involves supplying DSGL-listed technology, regardless of whether the technology has any connection to Australia. If the supply is from a foreign country, it is therefore possible that the Australian person would be required to obtain permits from both Defence and the local export authority. Additionally, Defence considers that it would be difficult to obtain the commercially sensitive information from a foreign company that Australia would need to assess the permit application.

14. Were this to be accepted, the Bill could be amended to remove the control on Australians located overseas supplying technology to a foreign person overseas.

Consistent with tangible controls – controlling all supplies from Australia

15. As currently drafted, the Bill does not control supplies from Australia to an Australian overseas. If the control on Australians overseas is removed as suggested in paragraphs 12 and 13 above, all supplies from Australia will need to be controlled to ensure the controls are comprehensive. This will also ensure that the intangible controls match the tangible controls which will have the additional benefit of easing implementation burden and cost. This change will ensure that if physical goods and associated technology are being transferred from Australia under the same circumstances, the requirements to seek a permit would be consistent for both movements.

16. Were this to be accepted, the Bill could be amended to control all supplies of technology from Australian territory to anyone located overseas.

Definitions – 'in the public domain' and 'basic scientific research'

17. As the Bill is currently drafted, the definitions for 'in the public domain' and 'basic scientific research' will be included in a legislative instrument. Following consultation, Defence understands the university sector's preference to have these definitions contained in higher level legislation to provide more certainty. Defence therefore proposes to work with the Office of Parliamentary Counsel to include these definitions in the Bill as far as is possible, and where this is not possible, to further explain the concepts in the Regulations. There will be no requirement for a legislative instrument.

18. The attached definitions deliberately match the definitions in the DSGL to provide identical exemptions for the existing tangible export of goods under the Customs Act and the intangible supply of technology relating to those same goods under the Bill. Also, these definitions will ensure Australia is consistent with other member states of the Wassenaar Arrangement. Defence is in the process of seeking comment from industry, university and research sectors on the explanatory examples of 'in the public domain'. Defence will continue to consult with the university and

research institutions to develop further explanatory guidance on how these definitions would be applied.

Removing controls on defence services

19. As the Bill is currently drafted, there is a broad control on anyone providing 'defence services' in relation to DSGL-listed goods. The Bill's current definition defines 'defence services' as including activities such as giving assistance in relation to design, repair, operation, destruction and use of all controlled goods – this control would apply equally to all goods listed on the DSGL. The current control of 'defence services' in the Bill is broader than the measures outlined in the Wassenaar Arrangement's publication *Best Practices for Implementing Intangible Transfer of Technology Controls* which proposes controls in accordance with the narrower DSGL controls.

20. Defence considers that Australia's Wassenaar Arrangement obligations will be met by the existing technology controls in the DSGL. The broad 'defence services' controls in the Bill would impose an unnecessary and burdensome level of regulation. Were this to be accepted, the Bill could be amended to remove the 'defence services' controls.

Additional control on publishing

21. The exemption for 'in the public domain' means that information which is already publicly available will not need a permit. While this usefully recognises that publicly available information should not be subject to regulation, it does introduce a significant vulnerability in that it would potentially allow any person to publish sensitive information as a way of making it 'in the public domain' and therefore not subject to control. As currently drafted, the Bill requires a person to seek a permit to supply controlled technology to another person but not to provide that same technology to the world at large. This issue was raised by the university sector in the course of recent consultations and Defence has advised the sector the introduction of this control is likely to be required.

22. Were this to be accepted, the Bill could be amended to include a new control for publishing that will impose an offence for publishing controlled technology without a permit and provide the mechanism to apply for a permit. Again, it is important to emphasise that the publication control would only be relevant if the proposed publication would communicate how to 'develop', 'produce' or in some cases 'use', the DSGL goods. Without this very specific content, publication will not be controlled.

Implementation of Strengthened Export Controls in the research sector

23. Defence has been consulting with the major science funding bodies, the Australian Research Council (ARC), the National Health and Medical Research Council (NHMRC) and the Department of Innovation, Industry, Science, Research and Tertiary Education, to find ways to alert researchers to the regulatory measures at the start of the scientific research process.

24. ARC and NHMRC have advised that they already require researchers who obtain funding approval to meet all laws that apply to their research. The Bill could

be implemented without the need for any change to their existing model. Defence will continue to engage with funding bodies to identify appropriate mechanisms for awareness raising. ARC and NHMRC will not assume any specific compliance function for defence controls but if they become aware of any non-compliance, they will advise Defence.

25. To decide whether to apply for a permit, a researcher will need to consider two questions:

- Does my research involve a controlled good (i.e. listed in the DSGL)?
- If yes, will I be supplying technology associated with the DSGL good that is neither exempt for being 'in the public domain' nor being supplied in the course of 'basic scientific research' to a person overseas - noting that technology is only controlled if the technology would enable the recipient to 'produce', 'develop' (or sometimes 'use') the controlled good?

26. Defence will be responsible for assessing potential risks associated with a supply of controlled technology and issuing permits as required.

27. Through consultation, the university and research sector have argued that it is too much to expect researchers to become familiar with the DSGL which is admittedly a large document. Defence responds to this concern by pointing out:

- A significant portion of technology will be exempt due to the 'in the public domain' and 'basic scientific research' exemptions.
- The researcher is an expert in their field and is well positioned to understand and apply the segment of the DSGL that relates to their research.
- The DSGL has an easily navigable index.
- The DSGL does not control all technology associated with DSGL goods; rather, the DSGL only controls certain types of information (technologies) associated with DSGL goods:
    - For many DSGL goods, the technology will only be controlled if the technology will enable the 'production' or 'development' of the DSGL good.
    - For fewer, more sensitive DSGL goods, the technology will be controlled if the technology will enable the 'production', 'manufacture' or 'use' of the DSGL good.
        - This aspect of the DSGL controls is often misunderstood and Defence's outreach program will need to expel the myth that 'All researchers who use DSGL goods in their research will need to obtain a permit'.

28. Universities and research institutions will need to instigate their own internal compliance and governance mechanisms to support awareness raising, permit applications and review of research in the same way the Defence industry already does for tangible exports. This has been reinforced in the attached Wassenaar Arrangement guidelines which outline the need for academic institutions to implement internal compliance programs. To assist them in this endeavour, Defence will conduct outreach activities and prepare materials to communicate these regulatory changes to the university and research sectors. Defence will remain engaged with the Department of Innovation, Industry, Science, Research and Tertiary Education and UA on outreach activities and materials, so that we can benefit from their knowledge of how to best communicate with the sector. Planned measures include:

- a simple user guide to help individuals to understand and navigate the Defence and Strategic Goods List;
- a sector-specific publication to assist the academic and research sectors to understand what Australia's export control system means for them (similar to the product developed previously for the mining industry);
- tools and guidance to help academic and research institutions to build internal compliance frameworks that are appropriate for their organisations;
- sector-specific outreach sessions for key export compliance staff (train the trainers); and
- sector-specific outreach sessions with researchers to help them understand their obligations and how the export control process works.

Yours sincerely

Michael Shoebridge
First Assistant Secretary
Strategic Policy Division

8 August 2012

Principles and Options for Strengthened Export Controls - after May 2012 feedback from University, Research and Defence Industry Sectors

The Defence Trade Controls Bill 2011 (the Bill) introduces new measures to strengthen Australia's export controls. These strengthened export controls are essential to eliminate identified gaps in Australia's export control system and align Australia's export controls with the accepted best practice of the export control regimes to which Australia belongs. The Wassenaar Arrangement countries agreed measures for Arms Brokering in 2003 and intangible technology controls in 2006.

As currently drafted, the Bill will strengthen export controls in three areas:

- intangible transfer of technology listed in the Defence and Strategic Goods List (DSGL) (e.g. blueprints of military vehicles ML22 & ML6) or (e.g. performance data for night vision equipment 6A002.a.2 & 6E101);
- provision of defence services related to goods and technology listed in the DSGL (e.g. providing assistance in the design of a military vehicle) or (e.g. maintaining night vision equipment); and
- brokers arranging supply of DSGL goods, technology and defence services.

The Bill is currently before the Senate Foreign Affairs, Defence and Trade Legislation Committee (the Committee) which has asked Defence and the academic sector to undertake further consultation with a view to resolving the university sector's concerns.

As a result, Defence has met with Universities Australia and agreed to develop principles and options for further consultation and discussion with the university and research sectors. Noting that any changes that result from these consultations with the academic and research sectors will also affect the industry sector, Defence has also sought comment on the options from the industry members who had provided comment to the Committee on the strengthened export control aspects of the Bill and from the members of the Defence Industry Advisory Panel that has been involved throughout the development of the Bill.

The consultations have emphasised that acceptance of any options is a matter for Government consideration following this consultative process.

In Defence's previous round of consultation, Defence had formulated three options (Options 1 – 3) and had circulated these options to the university, research and defence industry sectors. The feedback from this previous round along with further policy consideration of the risks associated with the Options 1 – 3, have been considered by Defence and this paper poses a further option, Option 4, for consideration by the three sectors.

Principles

1. Australia has an obligation to implement the Wassenaar Arrangement guidelines for Best Practices for Implementing Intangible Transfer of Technology Controls of 2006.

2. In April 2004, UN Security Council Resolution 1540 established binding obligations on all UN Member States to take and enforce effective measures against the proliferation of weapons of mass destruction, their means of delivery and related materials.[1]

3. Universities and research institutions need to be able to conduct teaching and research with foreign students and foreign researchers.

4. Universities do not want regulation to put them at a strategic disadvantage when providing educational services to foreign students in Australia or overseas.

5. The levels of controls on intangible technology transfers should be consistent with controls on tangible transfers and proportionate to the requirement to protect Australia's security, defence and international relations.

Options

Four options have been developed and all four options remove the specific controls currently in the Bill for provision of defence services. Instead, Defence proposes that it is sufficient for defence services to be controlled by reference to DSGL 'technology' controls which include controls on 'technical assistance' or 'use' for certain goods/items. It is proposed that there is no need to impose additional controls on other defence services beyond the controls contained in the DSGL.

It is anticipated that the exceptions for 'scientific research', 'basic scientific research' and 'public domain' would be outlined in the Bill and defined in the Regulations. These definitions will form part of the consultation process. Different options refer to 'scientific research' differently and may refer to 'pure basic research', 'basic strategic research', 'applied research', and 'experimental development' as defined by the ABS definitions (Chapter 2 Australian and New Zealand Standard Research Classification, 2008).[2] It is important to recognise that under the DSGL, all supplies of technology for 'basic scientific research' will be exempt.

Consultation to date

To date, the majority of feedback from the University, Research and Industry sectors indicated a preference for Option 3 but for different reasons:

- Defence has received diverse comments from defence industry:
    - Although exemptions for supplies of technology in the course of research would also apply to defence industry, they would be of little benefit to defence industry who conduct little basic or applied research.
    - From a risk of diversion perspective, defence industry commented that if these exemptions were granted, the risk of diversion of

[1] This obligation is fulfilled by Australia requiring permits for dual-use goods on Part 2 of the DSGL and the *Weapons of Mass Destruction (Prevention of Proliferation) Act 1995* –see Annex B. The introduction of intangible controls for supply of dual-use DSGL technology will further strengthen these existing controls.

[2] See Annex A.

Australian controlled technology to unknown entities would seemingly increase and this may impact on Australia's international standing.

- While none of the Options make defence industry worse off than under the Bill's current provisions, the options do not benefit industry to the same extent as university and research sectors.

- Defence industry supports a model that aligns as closely as possible with the tangible export system arguing that it would be difficult to structure an internal compliance framework to support different regulatory models for the export of the tangible good and the supply of its associated technology. Of the current options, Option 3 is more closely aligned than Options 1 and 2.

- University sector feedback indicates support for Option 3 which provides the broadest exemptions for scientific research and recognises that the bulk of university teaching and research would be exempt under this option. While noting that Option 3 most closely addresses the concerns raised by universities during the consultation, the university sector asks for further exemptions if the technology is supplied to citizens of Wassenaar countries or if the research is conducted for the 'public good' as demonstrated by an intention to publish.

- Research sector feedback indicates a preference for Option 3 as it is 'most conducive to minimising any adverse impacts on the sector'. Discussions with the research sector also indicate that research can be difficult to categorise as basic, basic strategic, applied or experimental development. Further, research is fluid and can quickly change in scope and move from one category to another.

Other feedback argues that it would be difficult for universities, researchers and industry members to create an internal compliance framework if there are different levels of regulation for domestic and international supplies.

Feedback also indicates there is misunderstanding around the breadth of the technology controls in the DSGL and these will be further explained in the next section.

Concern continues to be expressed in all sectors about the challenge of implementing new regulation. Regardless of whatever form the legislation may finally take, Defence reaffirms its commitment to work with those affected by providing training, awareness-raising materials, advice on establishing an internal compliance framework and being available to answer any questions. Implementing arrangements will be designed to be as simple and practicable as possible, and Defence will consult further with the defence industry, university and research sectors to establish mutually acceptable arrangements.

Policy considerations

The DSGL does not control all technology associated with DSGL goods; rather, the DSGL only controls certain types of information (technologies) associated with DSGL goods. For many DSGL goods, the technology will only be controlled if the technology will enable the 'production' or 'development' of the DSGL good. For

fewer, more sensitive DSGL goods, the technology will be controlled if the technology will enable the 'production', 'manufacture' or 'use' of the DSGL good.

Therefore, research that involves DSGL goods or technologies may not necessarily require a permit even if the research involves collaboration with foreign persons. Asking, 'Does your research involve DSGL goods and foreign persons?' only gets you part of the way. The more relevant questions are 'Will the technology that is supplied, enable the foreign person to produce or develop the DSGL good?' and for more sensitive DSGL goods, 'Will the technology that is supplied, enable the foreign person to produce, develop or use the DSGL good?'

Defence has analysed in greater detail how the research exemptions in Options 1 to 3 would work in practice and identified that providing exemptions for a broad range of research allows DSGL technology to be supplied to foreign persons without an assessment of the supply and the risk it presents. This would present a significant risk to Australia's defence, security and international relations.

Regardless of the type of research that is being conducted, DSGL technology can only be protected if supplies of that technology are assessed. Put another way, it is not relevant to consider the type of research or what is being researched, it is only important to consider what technology is being supplied in the course of that research and to whom. Therefore, a researcher could conduct highly sensitive research into improving the performance of sensitive DSGL good and that researcher would not need to apply for permit unless there is a supply of DSGL technology to a foreign person in the course of the research. Conversely, a researcher could conduct public-good research in a field unrelated to the DSGL but if the research includes the supply of DSGL technology to a foreign person in the course of that research (e.g. a cancer researcher supplying instructions to a foreign researcher on how to produce or develop cholera toxin), that researcher would need to apply for a permit. Annex D provides examples that distinguish the conduct of research from the supply of technology in the course of research and explore the risks posed by supply of technology in the course of research

Noting comments received from all sectors regarding the US and UK regulatory models, Defence has consulted with the US and the UK to better understand the scope of their intangible controls relating to research. Defence understands that the US regulates all transfers of technical data to foreign persons inside and outside the US with few exemptions that are relevant to the research or university sectors. While there is a public domain exemption for the results of fundamental research [fundamental research includes basic and applied research] conducted by accredited institutions, transfers of controlled technical data to foreign persons in the course of that research are regulated. There is also a narrow exemption for transfers to most foreign employees of higher learning institutions.

Consultation with the US Department of State has established that although they see it as a matter for the Australian Government, and noting that these controls are separate to the US ITAR framework, exemptions for all transfers of controlled technology that occur in the course of research could increase the risk of diversion of controlled technology.

The UK's Export Control Organisation reports that they do not apply any restrictions to intangible supplies of controlled technology inside the UK but all intangible supplies of technology to a person or place outside the UK, are subject to controls, except for those that occur in the course of 'basic scientific research' or for information already in the 'public domain'. Specifically the UK notes that, 'Transfers

of controlled technology or software by academics to destinations outside the UK/EU, e.g. in the course of collaborative research, are licensable in the same way as any other [tangible] transfer of controlled technology/software.' These controls apply regardless of whether the person outside the UK is a foreign person or a UK citizen.

These international models make a clear distinction between the conduct of research and the supply of controlled (i.e. DSGL) technology in the course of research. Although the US and UK differ in their approach to regulating the conduct of research, both the US and UK systems regulate the transfer of controlled technology in the course of research and do not provide any exemption for supplies in the course of research other than for supplies in the course of 'basic scientific research' or for information in the 'public domain'.

How will permits work?

The consultation has shown an interest in the practicalities of how permits for supply of technology will work in practice. When a permit is required, subsection 11(5) of the Bill allows for the permits to cover more than one activity or to be for a specified period. The Government envisages that for some activities, it will be able to issue very broad permits that cover a series of activities; for example, for a lower-risk activity, the permit may cover supplies to foreign researchers in specified destinations during the course of research, conference presentations and publishing the research results; or a permit may cover activities for the life of a Defence acquisition project. For other more sensitive supplies, permits may need to be tightly framed to allow the supply of a specified technology to a specified foreign person.

Option 1 – approximates Australia's existing tangible export model and the UK intangible control model

This option would provide for a relatively free transfer of DSGL-listed technology within Australia. More controls would apply to technology transfers to foreign persons outside Australia.

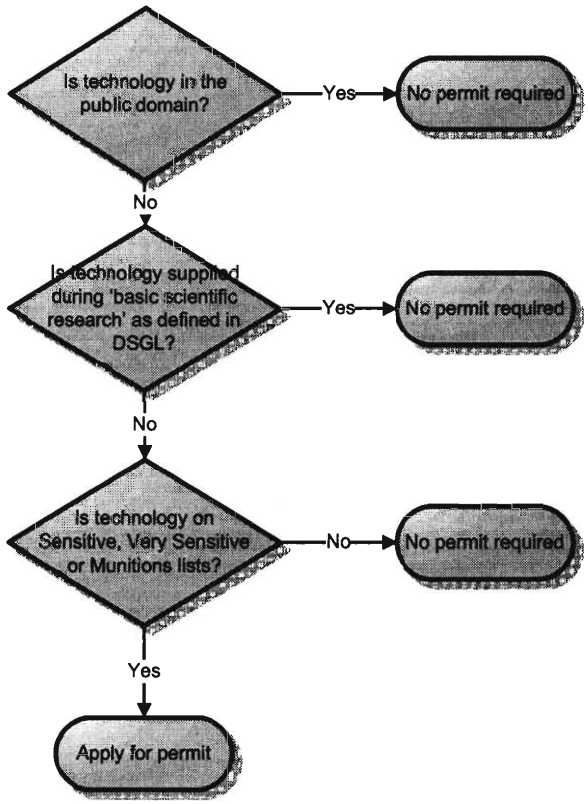
1. Supplies within Australian territory:

   Permit required for a supply of technology to a foreign person if the technology is **not** in the 'public domain' and it is listed on:

   - the Sensitive or Very Sensitive Lists of Dual-use Goods and Technology of DSGL (DSGL pp253-274); or
   - Munitions List 22 (DSGL p51) – specific military weapons and associated equipment agreed to be controlled under the Wassenaar Arrangement.

   Under the DSGL, all supplies of technology for 'basic scientific research' are exempt.

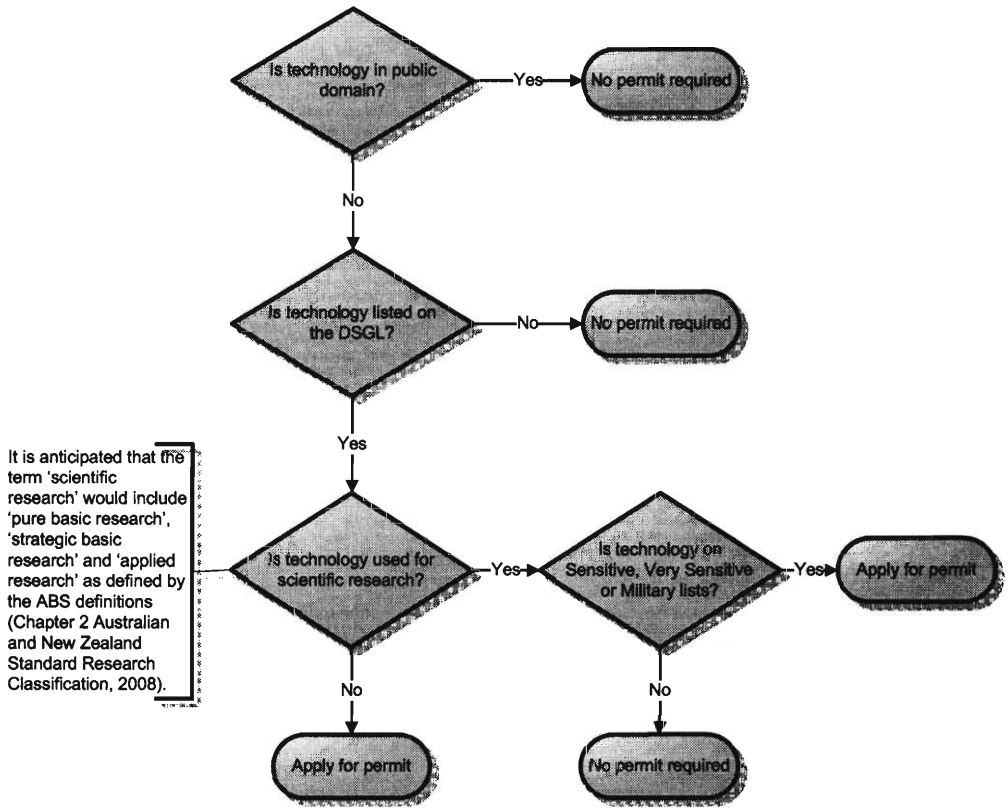
Option 1
Supply **within** Australia – Australian person → Foreign person



2. Supplies outside Australian territory:

- Permit would be required for supply of technology to foreign persons outside Australia either from Australian territory or by an Australian person unless:
    - the technology is in the 'public domain'; or
    - the supply is in the course of 'scientific research' provided the technology is not listed on:
        - the Sensitive or Very Sensitive Lists of Dual-use Goods and Technology of DSGL (DSGL pp253-274); or
        - Munitions List 22 (DSGL p51) – technology related to specific military weapons and associated equipment agreed to be controlled under the Wassenaar Arrangement.

Option 1
Supply **outside** Australia to Foreign Person
(from Australian territory or from Australian Person)



Option 1 advantages:

- Lowers controls within Australia where the supplies occur in a lower risk environment but recognises that even within the lower-risk Australian environment, there are sensitive and munitions technologies that need to be regulated.

- Except for some limited controls within Australia for sensitive and munitions technologies, this option largely follows Australia's tangible export system and exercises controls when the technology is supplied outside Australia and accordingly industry will not need to re-align its business practices.

- Similar to the application of intangible controls in the UK which creates greater consistency of approach in the international environment.

- Recognises that research will be conducted in collaboration with foreign researchers located overseas and only seeks to control DSGL technology that is not in the 'public domain', supplied for experimental research, or relates to sensitive DSGL goods.

- Includes reference in the Bill to the exclusions for 'scientific research' and 'public domain' information. These terms will be fully defined in the Defence Trade Controls Regulations.

- Recognises Australia's international obligations to place a higher level of controls on sensitive DSGL technologies.

- Allowing relatively permit-free supply of DSGL technology within Australia, recognises the important role that will be performed by universities and research institutions in promoting self-compliance and awareness of responsibilities; functions that will be supported by the development of an industry code of conduct and appointed export control officers within institutions in line with Wassenaar Arrangement expectations.[3]

- Higher level of control than Option 3 as it increases the Government's visibility of supplies of DSGL technology that occur in the course of 'strategic basic research' and 'applied research'.

Option 1 disadvantages:

- Foreign person visiting Australia dealing with DSGL-listed technology would need to apply for permit to supply the technology to a foreign person outside Australia regardless of whether the technology is obtained from an Australian source.[4]

- Different control levels for within and outside Australia, require the supplier to consider where the supply is taking place.

Option 2 – Non-territorial controls but stronger controls around an Australian person

This option provides for controls to be exercised when an Australian person supplies DSGL-listed technology to a foreign person regardless of the location of the foreign person. Once a foreign person has possession of the DSGL-controlled technology, they do not require a permit to transfer the DSGL-listed technology further.

1. Permit would be required for all supplies of DSGL-listed technology from an Australian person to a foreign person unless:

    - the technology is already in the public domain; or

    - the supply is in the course of scientific research or except if the technology is listed on:

        - the Sensitive or Very Sensitive List of Dual-use Goods and Technology of DSGL (DSGL pp253-274); or

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[3] Wassenaar Arrangement Best Practices of Implementing Intangible Transfer of Technology Controls, p2, para B.3.

[4] See SAAB evidence to Foreign Affairs, Defence and Trade Legislation Committee on 2 March 2012, p9. Defence envisages a broad permit could be obtained by multinational companies to provide for this scenario over a period of time.

- Munitions List 22 (DSGL p51) – specific military weapons and associated equipment agreed to be controlled under the Wassenaar Arrangement.

Option 2 advantages:

- Higher protection for all DSGL-listed technology regardless of location of the supply.
- Consistent approach where permits required from all Australian persons regardless of whether the foreign recipient is in Australia or overseas. If the technology is subsequently supplied overseas, there would be no requirement for a further permit.
- Foreign person visiting Australia dealing with DSGL-listed technology would **not** need to apply for permit to supply technology to a foreign person outside Australia.
- Does not require the supplier to consider where the supply is taking place.

Option 2 disadvantages:

- Diverges from Australia's tangible export system and industry would need to re-align its business practices.
- Permits would be required for all supplies to foreign employees, foreign students and foreign researchers in Australia.
- Higher level of regulations will result in increased compliance burden for Government, industry, research and academic sectors.

Option 3 – approximates Option 1 but applies main filters at the start and broadens exemptions for 'scientific research'

This option changes the orders of the decisions to ensure that the main filters are earlier in the decision-making process. In doing so, this option recognises the complexity of the DSGL and by excluding 'public domain' information and most 'scientific research' up front, it requires fewer staff members of industry, universities and research institutions to become familiar with the provisions of the DSGL.

1. Supplies to foreign persons within Australian territory:

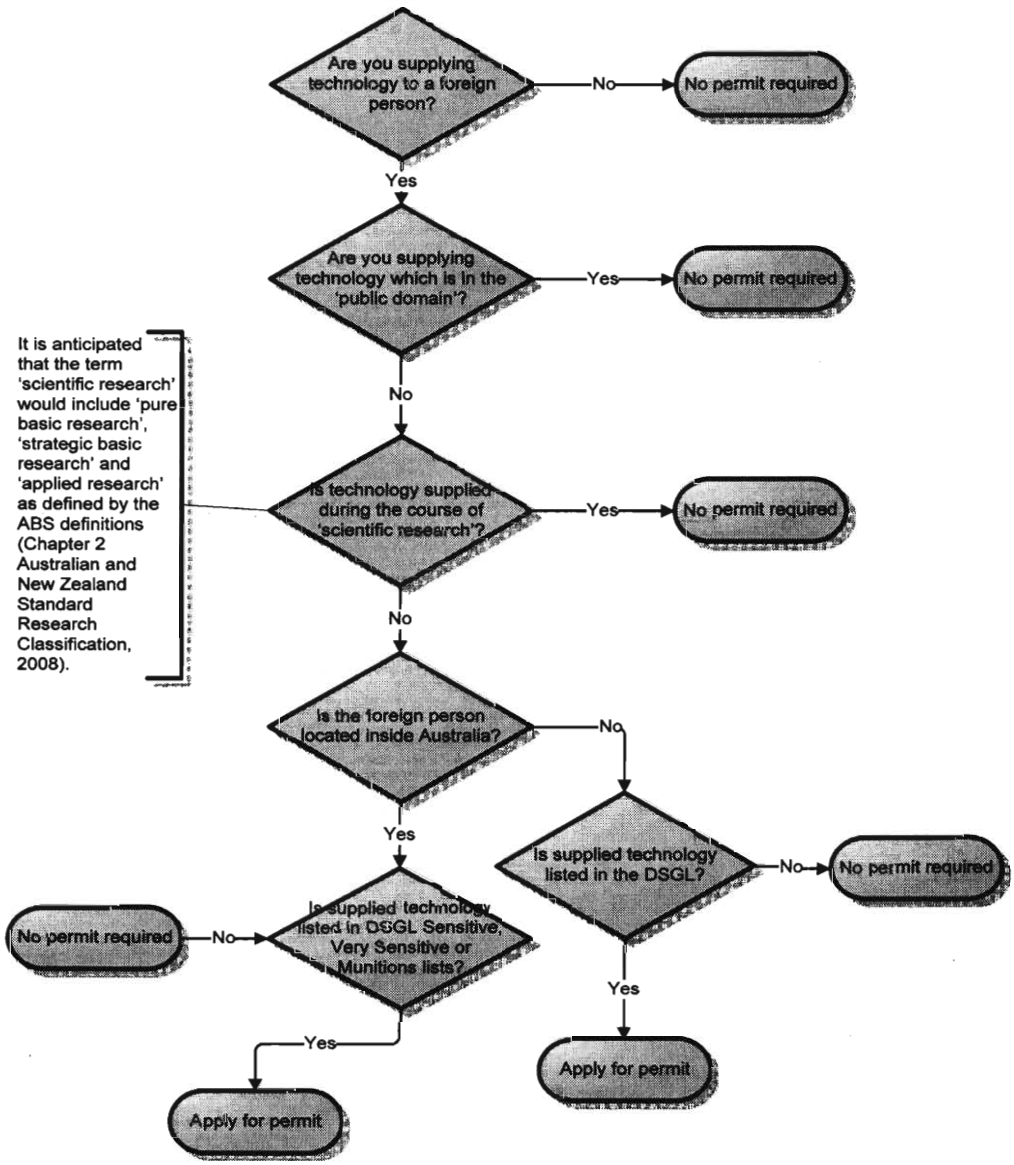
   Unless the technology is in the 'public domain' or the supply occurs in the course of 'scientific research', a permit will be required for a supply of technology if the technology is listed on:

   - Sensitive or Very Sensitive Lists of Dual-use Goods and Technology of DSGL (DSGL pp253-274); or
   - Munitions List 22 (DSGL p51) – specific military weapons and associated equipment agreed to be controlled under the Wassenaar Arrangement.

2. Supplies to foreign persons outside Australian territory either from Australian territory or by an Australian person:

> Unless the technology is in the 'public domain' or the supply occurs in the course of 'scientific research', a permit will be required if the technology is listed on the DSGL.

Option 3 – combined flowchart for supplies within Australia and outside Australia



Option 3 advantages:

- Applies the main filters at the start of the process which will ensure that fewer people will need to become familiar with the DSGL.

- Excludes more 'scientific research' from regulation as it removes the need to apply for a permit for supplies of technology that occur in the course of 'pure basic research', 'strategic basic research' or 'applied research',

irrespective of whether the research is being conducted inside or outside Australia.

- Lowers controls within Australia where the supplies occur in a lower risk environment but recognises that even within the lower-risk Australian environment, there are sensitive and munitions technologies that need to be regulated.

- Except for some limited controls within Australia for sensitive and munitions technologies, this option largely follows Australia's tangible export system and exercises controls when the technology is supplied outside Australia and accordingly industry will not need to re-align its business practices.

- Similar to the application of intangible controls in the UK which creates greater consistency of approach in the international environment.

- Recognises that research will be conducted in collaboration with foreign researchers located overseas and only seeks to control DSGL technology that is neither in the 'public domain' nor supplied in the course of 'scientific research'.

- Includes reference in the Bill to the exclusions for 'scientific research' and 'public domain' information. These terms will be fully defined in the Defence Trade Controls Regulations.

- Recognises Australia's international obligations to place a higher level of controls on sensitive DSGL technologies.

- Allowing relatively permit-free supply of DSGL technology within Australia, recognises the important role that will be performed by universities and research institutions in promoting self-compliance and awareness of responsibilities; functions that will be supported by the development of an industry code of conduct and appointed export control officers within institutions in line with Wassenaar Arrangement expectations.[5]

Option 3 disadvantages:

- Foreign person visiting Australia dealing with DSGL-listed technology would need to apply for permit to supply the technology to a foreign person outside Australia regardless of whether the technology is obtained from an Australian source.[6]

- Lesser level of control than Option 1 and decreases the Government's ability to assess supplies of DSGL technology that occur in the course of 'strategic basic research' and 'applied research'.

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[5] Wassenaar Arrangement Best Practices of Implementing Intangible Transfer of Technology Controls, p2, para B.3.

[6] See SAAB evidence to Foreign Affairs, Defence and Trade Legislation Committee on 2 March 2012, p9. Defence envisages a broad permit could be obtained by multinational companies to provide for this scenario over a period of time.

- Different control levels for within and outside Australia will require the supplier to consider where the supply is taking place.

- Requires researchers and Defence to agree on the research category.

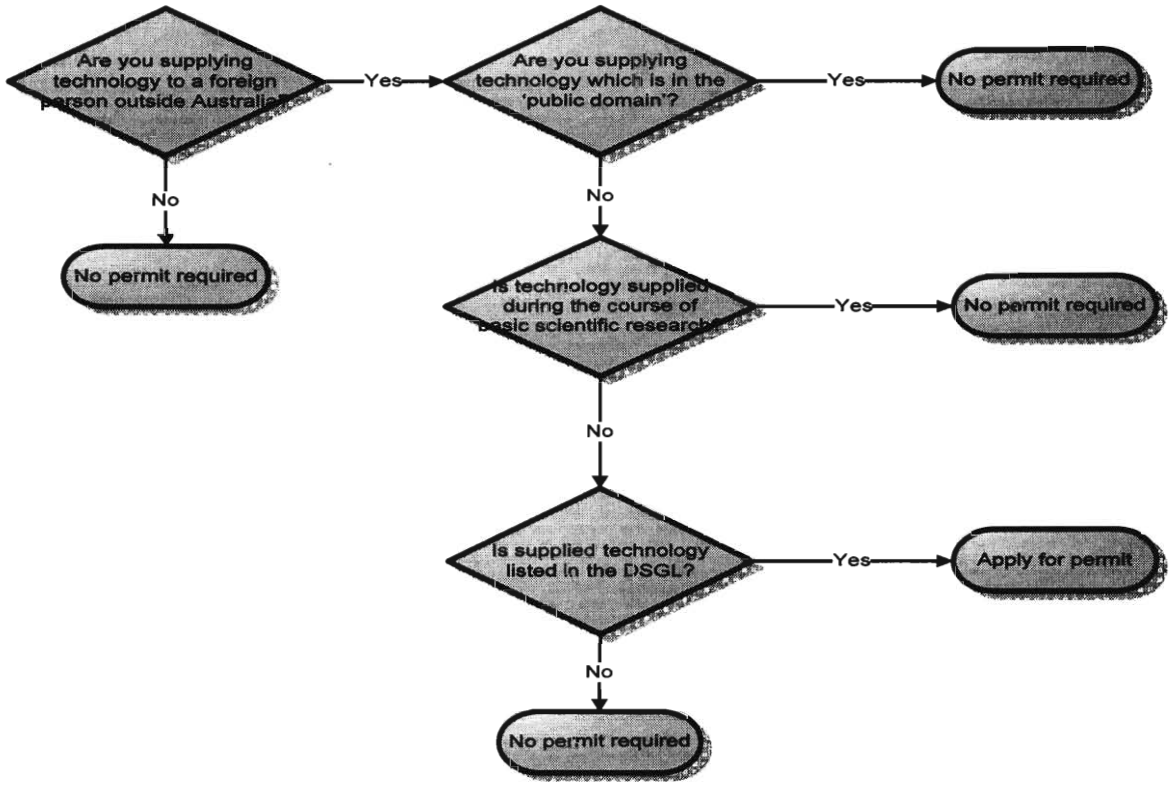
Option 4 – matches Australia's existing tangible export model and mirrors the UK intangible control model

For the policy reasons outlined on pages 3 and 4 of this paper, Option 4 does not include the broader research exemptions that are included in the other options. To remove differing levels of controls inside and outside Australia, Option 4 proposes a model that does not apply any levels of control inside Australia and focuses the controls on supplies of technology to foreign persons outside Australia. Defence has assessed that there is a manageable level of risk posed by unregulated supplies of technology within Australia where all foreign persons have been subject to border control processes and other security-related domestic legislation applies.

Option 4 would regulate supplies of DSGL technology outside Australian territory:

- Permit would be required for supply of technology to foreign persons outside Australia either from Australian territory or by an Australian person unless:
    - the technology is in the 'public domain'; or
    - the supply is during the course of 'basic scientific research'.

Option 4 – combined flowchart - No controls within Australia - controls outside Australia Mirrors tangible controls and UK system



Option 4 advantages:

- Aligns closely with Australia's existing tangible export controls.
- Emulates UK's control system by only regulating technology being supplied outside Australia.
- Implements Australia's obligations under the Wassenaar Arrangement to regulate intangible transfers of DSGL technology unless the technology is in the 'public domain' or being supplied in the course of 'basic scientific research'. This will give the international community confidence in Australia's levels of export control.
- Removes differing levels of control inside and outside Australia as controls within Australia are totally removed.
- No additional regulation for teaching, research and business activities conducted inside Australia.
- All Australian researchers, lecturers and defence industry employees will be able to supply DSGL technology to foreign persons located within Australia without the need to apply for permits.

- Consistent level of regulation across teaching, research and business sectors when transferring DSGL technology outside Australia.

- Removes some of the difficulties presented by categorising research, although some supplies will be exempt if research is classified as 'basic scientific research'.

- Includes reference in the Bill to the exclusions for 'basic scientific research' and 'public domain' information. These terms will be fully defined in the Defence Trade Controls Regulations.

Option 4 disadvantages:

- Higher level of regulation than other options for research when supplying DSGL technology to foreign persons overseas, noting that controls only apply where the technology enables the production, manufacture (or use) of DSGL goods.

Annex A

Australian Bureau of Statistics Definitions - levels of Scientific Research[7]

Pure basic research

Experimental and theoretical work undertaken to acquire new knowledge without looking for long term benefits other than the advancement of knowledge.

Strategic basic research

Experimental and theoretical work undertaken to acquire new knowledge directed into specified broad areas in the expectation of useful discoveries. It provides the broad base of knowledge for the solution of recognised practical problems

Applied research

Original work undertaken primarily to acquire new knowledge with a specific application in view. It is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving some specific and predetermined objectives.

Experimental development

Systematic work, using existing knowledge gained from research or practical experience, which is directed to producing new materials, products, devices, policies, behaviours or outlooks; to installing new processes, systems and services; or to improving substantially those already produced or installed.

[7] Chapter 2 Australian and New Zealand Standard Research Classification, 2008

Annex B

The Weapons of Mass Destruction (Prevention of Proliferation) Act 1995

The WMD Act operates in a similar manner to the UK's catch-all WMD controls. Where a person (university, lecturer, researcher) believes or suspects that through the supply of goods, or the provision of services (which includes providing training, or providing technological information or know-how) an activity will or may contribute to a WMD program, then the person commits an offence under the Act unless a permit has been granted by the Minister or the Minister has given a written notice stating that the Minister has no reason to believe or suspect that the goods or services will or may be used in a WMD program.

Annex C

BEST PRACTICES FOR IMPLEMENTING INTANGIBLE TRANSFER OF TECHNOLOGY CONTROLS

(Agreed at the 2006 Plenary)

Ensuring that control is exercised over intangible transfers of both dual-use and conventional weapons technology[1] (ITT) and is recognized by Participating States of the Wassenaar Arrangement as critical to the credibility and effectiveness of their domestic export control regime. As clear and precise control requirements facilitate effective export control implementation, the Participating States have adopted the following "best practices" for the implementation of export controls over intangible transfers of WAcontrolled technology[8].

A. Recognizing the inherent complexities of export control regulation for ITT, Participating States of the Wassenaar Arrangement support:

1. Designing national laws and regulations with clear definitions of ITT via both oral and electronic means of transmission; including,

a) Determination of what constitutes an ITT export; and,

b) Determination of when an ITT export occurs;

2. Specifying in national laws and regulations the intangible technology transfers which are subject to export control;

3. Specifying in national laws and regulations that controls on transfers do not apply to information in the public domain or to basic scientific research; and,

B. Recognizing that national export control authorities benefit from the cooperation of industry, academia, and individuals in the regulation of ITT, Participating States of the Wassenaar Arrangement support:

1. Promoting awareness of ITT controls by such means as publication of regulatory handbooks and other guidance material, posting such items on the internet, and by arranging or taking part in seminars to inform industry and academia;

2. Identifying industry, academic institutions, and individuals in possession of controlled technology for targeted outreach efforts and,

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[8] [1] "Technology"
Specific information necessary for the "development," "production" or "use" of a product. The information takes the form of technical data or technical assistance. Controlled "technology" for the Dual-Use List is defined in the General Technology Note and in the Dual-Use List. Controlled "technology" for the Munitions List is specified in ML22.
Technical Notes
1. 'Technical data' may take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories.
2. 'Technical assistance' may take forms such as instruction, skills, training, working knowledge, consulting services. 'Technical assistance' may involved transfer of 'technical data.'

3. Promoting self-regulation by industry and academic institutions that possess controlled technology, including by assisting them in designing and implementing internal compliance programs and encouraging them to appoint export control officers.

C. Recognizing the importance of post-export monitoring and proportionate and dissuasive penalties to deter non-compliance with national ITT laws and regulations, Participating States support:

1. The imposition of a requirement on industry, academia, and individuals to keep records, for an appropriate period of time, that clearly identify all controlled technology transferred, the dates between which it was transferred, and the identity of the end-user of all intangible transfers of technology for which licenses have been issued that may be inspected by, or otherwise provided to, export control authorities upon request;

2. Regular compliance checks of those that transfer controlled technology by intangible means and,

3. The provision of training to export control enforcement authorities on appropriate investigative techniques to uncover violations of national controls on ITT exports or access to such specialist expertise;

4. Appropriate surveillance or monitoring, pursuant to national laws and regulations, of entities that are suspected by national export control or other relevant national government authorities of making unauthorized intangible transfers of controlled technology.

5. The sanctioning by national authorities of those under their jurisdiction that have transferred controlled technology by intangible means in violation of export controls.

D. Participating States also support:

1. The exchange of information on a voluntary basis concerning suspicious attempts to acquire controlled technologies, with appropriate authorities in other Participating States.

Annex D

Scientific Research Examples

Example 1 – Infectious diseases research

Research in microbiology and infectious disease medicine involves certain DSGL-controlled goods in the form of biological materials including human pathogens, animal pathogens and plant pathogens (DSGL 1C351 to 1C354 – pp 98-102) (e.g. Clostridium botulinum (botulinum toxin), dengue fever virus, Newcastle disease virus, cholera toxin etc). The research into these pathogens is important to stop the spread of infectious disease and to develop vaccines to combat the diseases. The technologies associated with these pathogens need to be controlled because if the pathogen can be produced or developed, it could be used as a biological weapon.

The technologies associated with the production and development of these pathogens are controlled in the DSGL because they can be used to produce biological weapons (DSGL 1E001 - p105). There is no requirement for a permit to conduct the infectious diseases medical research. There would only be a requirement to apply for a permit if the DSGL controlled technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply the technology to enable a foreign researcher or PhD student employed in the lab in Australia to produce or develop the pathogen for the purposes of the research and this will not be controlled because the supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use the pathogen safely, this would not be controlled because the DSGL only controls technology associated with production of the pathogen and does not control technology associated with using the pathogen.

Under Option 3, because the research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to produce or develop the pathogen. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Example 2 – Cancer research

Garner's aldehyde is a useful building block in research that will hopefully lead to advancements in cancer treatments.

The main chemical used to make Garner's Aldehyde is Oxalyl Chloride (DSGL 1C350.65 – p97). Oxalyl Chloride is listed on the DSGL because it can also be used to create phosgene gas, a chemical weapon. Any technology that would enable a person to produce or develop Oxalyl Chloride would also be controlled (DSGL 1E001 – p105). The DSGL technology controls for Oxalyl Chloride do not extend to 'use', so supplying technology to a person to enable them to use Oxalyl Chloride would not be controlled. None of the options would require a permit to conduct the cancer research just because that research involves Oxalyl Chloride.

There would only be a requirement to apply for a permit if 'production' or 'development' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to develop or produce Oxalyl Chloride and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use Oxalyl Chloride safely, this would not be controlled because the DSGL only controls technology associated with production or development of the chemical and does not control technology associated with use of the chemical.

Under Option 3, because the cancer research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to produce Oxalyl Chloride. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Example 3 – Quantum science research

Quantum science research involves developing advanced precision measurement systems based on quantum technology that will assist to develop new sensors for the mining industry, new atomic clocks for astronomy, and quantum computers (computers that store and process data by manipulating light (i.e. photons) instead of using electrical devices (i.e. transistors).

Advanced precision measurement systems are not controlled in the DSGL; however, the research involves high performance magnetometers for precise measurement of magnetic fields during experiments. Magnetometers are listed on the DSGL (6A006.a – pp 206-7) because they are used in submarines, UAVs and missile navigation systems. The DSGL also controls technology that is required for production or development of a magnetometer (DSGL 6E001 and 6E002 – p216). The DSGL technology controls for magnetometers do not extend to 'use', so supplying technology to a person to enable them to use a magnetometer would not be controlled. None of the options would require a permit to conduct the quantum research just because that research involves magnetometers.

There would only be a requirement to apply for a permit if 'production' or 'development' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to develop or produce a magnetometer and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use a magnetometer, this would not be controlled because the DSGL only

controls technology associated with production or development of magnetometers and does not control technology associated with use of magnetometers.

Under Option 3, because the quantum science research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to develop or produce a magnetometer. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Analysis of selected case study examples in Universities Australia's response to questions on notice to the Committee

Example 2 – Research into bowel related diseases. The research involves several human pathogen bacteria listed in DSGL 1C351.c (e.g. clamydia sittaci) because these bacteria can be used in biological weapons. The DSGL also controls technology that is required for production or development of these pathogen bacteria (DSGL 1E001 – p105). The DSGL technology controls for these pathogen bacteria do not extend to 'use', so supplying technology to a person to enable them to use human pathogen bacteria safely would not be controlled. None of the options would require a permit to conduct the bowel related disease research simply because that research involves DSGL-listed human pathogen bacteria.

There would only be a requirement to apply for a permit if 'production' or 'development' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher employed in the lab in Australia to develop or produce a human pathogen bacteria and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use the human pathogen bacteria safely, this would not be controlled because the DSGL only controls technology associated with production or development of the human pathogen bacteria and does not control technology associated with use of the human pathogen bacteria. Similarly the DSGL would not control the general outcomes

Under Option 3, because the bowel disease research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to develop or produce the human pathogen bacteria. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Example 3 – Research involving a Hot Isostatic Press that will be used by a consortium of universities to research aerospace materials. The example states that non-Australian Research Fellow and PhD students are likely to use the equipment and the research will be undertaken in collaboration with international firms.

Depending on the performance levels, the hot isostatic presses may be controlled (DSGL 2B004; 2B104 and 2B204) because they are used to manufacture aero-engine turbine blades, and other high-temperature components of engines,

missiles and rockets. The DSGL also controls technology that is required for production, development or use of the hot isostatic press (DSGL 2E001, 2E002, 2E003.b.2, 2E101, 2E201 – pp130-131). None of the options would require a permit to conduct the aerospace materials research simply because that research involves a DSGL-listed hot isostatic press and foreign researchers or students. There would only be a requirement to apply for a permit if 'production', 'development' or 'use' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a non-Australian Research Fellow or PhD student employed in the lab in Australia to develop, produce or use the hot isostatic press and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher or industry member located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk.

Under Option 3, because the aerospace materials research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher or industry member to show them how to develop, produce or use the hot isostatic press. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Example 4 – Green chemistry research – synthesis of terpyridine. The research involves two controlled chemicals, phosphorous pentachloride and phosphorous oxychloride listed in DSGL 1C350.38 and 1C350.2 (DSGL pp95-96) because these chemicals can be used to produce chemical weapons. The DSGL also controls technology that is required for production or development of these chemicals (DSGL 1E001 – p105). The DSGL technology controls for these chemicals do not extend to 'use', so supplying technology to a person to enable them to use phosphorous pentachloride and phosphorous oxychloride safely would not be controlled. None of the options would require a permit to conduct the green chemistry research simply because that research involves phosphorous pentachloride and phosphorous oxychloride and foreign researchers or students.

There would only be a requirement to apply for a permit if 'production' or 'development' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to develop or produce phosphorous pentachloride and phosphorous oxychloride and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher or student located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use phosphorous pentachloride and phosphorous oxychloride safely, this would not be controlled because the DSGL only controls technology associated with production or development of phosphorous pentachloride and phosphorous oxychloride and does not control technology associated with use of phosphorous pentachloride and phosphorous oxychloride.

Under Option 3, because the green chemical research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to develop or produce phosphorous pentachloride and phosphorous oxychloride. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Case Study 1 – University of Sydney – quantum science. The research undertaken by Dr Biercuk promises to deliver a new class of technologies that will strive to address problems in computation, communications and metrology. The research involves DSGL controlled goods and technologies:

DSGL Good	**DSGL Good Ref**	**DSGL Technology**	**DSGL Technology Ref**	**Reason for DSGL control**
Beryllium metal or alloys	1C230 p93	production development use	1E001, 1E201 pp 105, 106	Radiation windows (low X ray absorption); components of missiles and satellites, lightweight mirrors
Analogue to digital & digital to analogue converter integrated circuits	3A001.a.5	production development	3E001 p162	Signal processing applications in radars, military communication systems and electronic warfare (EW) systems
Microwave monolithic integrated circuits	3A001.b.2.a-f	production development	3E001 p162	Radar circuits/components
oscillators	3A001.b.10.a-b	production development	3E001 p162	Timing generation for sensitive digital circuits – communications, radars, EW
Atomic frequency standards	3A003.g	development	3E001 + Note 1 p162	Similar as oscillators
Superconducting solenoid electromagnets	3A201.b	Production development use	3E001, 3E201 pp162-3	Uranium enrichment (i.e. electromagnetic separation)
Tunable and other Lasers	6A005.c-d	Production development use (for 6A005.c.2)	6E001, 6E201 pp216-7	Uranium enrichment, weapon control systems, EW systems and directed energy weapons

None of the options would require a permit to conduct the quantum science research simply because that research involves controlled goods and foreign researchers or students. There would only be a requirement to apply for a permit if 'production', 'development' or 'use' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to develop, produce or use the goods listed in the table above and this will not be controlled because the technology supplies occur in Australia. If the Australian researcher wanted to supply that same controlled technology to a foreign researcher or student located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk.

Under Option 3, because the quantum science research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send the technology to an overseas researcher to show them how to develop, produce or use the controlled goods. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Case Study 2 – University of Sydney – melanoma research. The research aims to solve practical challenges in the causes, prevention diagnosis and treatment of melanoma. The research employs human toxins for their signalling properties; one of which is cholera toxin which is listed in DSGL 1C351.d.13 (DSGL p100). This toxin can be used to produce biological weapons. The DSGL also controls technology that is required for production or development of cholera toxin (DSGL 1E001 – p105). The DSGL technology controls for cholera toxin do not extend to 'use', so supplying technology to a person to enable them to use cholera toxin safely would not be controlled. None of the options would require a permit to conduct the melanoma research simply because that research involves cholera toxin and foreign researchers or students.

There would only be a requirement to apply for a permit if 'production' or 'development' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to develop or produce cholera toxin and this will not be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply that same technology to a foreign researcher or student located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use cholera toxin safely, this would not be controlled because the DSGL only controls technology associated with production or development of cholera toxin and does not control technology associated with use of cholera toxin.

Under Option 3, because the melanoma research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to develop or produce cholera toxin. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by this proposed overseas supply.

Case Study 3 – University of Sydney – infectious diseases research. The research aims to solve practical challenges in the causes, prevention, diagnosis, treatment, containment and control of emerging and re-emerging infectious diseases such as Salmonella typhi, Bartonella quintana, Hendra virus and SARS.

The infectious diseases are classed as human or animal pathogens which are controlled goods (DSGL 1C351,p98 and 1C352, p100) and the research also involves controlled apparatus for containing such biohazards (DSGL 2B352, pp127-8). The DSGL also controls technology that is required for production or development of the pathogens (DSGL 1E001 – p105) and development, production or use of the apparatus (DSGL 2E001, 2E002 and 2E301, pp130-1)). The DSGL technology controls for pathogens do not extend to 'use', so supplying technology to a person to enable them to use the pathogen safely would never be controlled. However, the DSGL technology controls for the apparatus do extend to 'use', so supplying technology to a person to enable them to use the apparatus may be controlled in certain circumstances. None of the options would require a permit to conduct the infectious diseases research simply because that research involves pathogens, controlled apparatus and foreign researchers or students.

There would only be a requirement to apply for a permit if 'production', 'development' or 'use' DSGL technology is supplied in the course of the research. Options 3 and 4 are contrasted below.

Analysis under Options 3 and 4

Under Option 4, an Australian researcher could supply technology to enable a foreign researcher or PhD student employed in the lab in Australia to either develop or produce a pathogen or supply technology for development, production or use of the controlled apparatus. Neither of these technology transfers will be controlled because the technology supply occurs in Australia. If the Australian researcher wanted to supply those same technologies to a foreign researcher or student located overseas, under Option 4, the researcher would need to apply for a permit. In this way, Defence would be able to assess the risk posed by the technology supply and grant a permit in circumstances where there is an acceptable level of risk. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use the pathogen safely, this would not be controlled because the DSGL only controls technology associated with production or development of the pathogen and does not control technology associated with use of the pathogen. If the Australian researcher wanted to send technology to an overseas researcher to show them how to use the controlled apparatus, this would be controlled and the researcher should apply for a permit.

Under Option 3, because the infectious diseases research is likely to be classified as applied research, there would be no requirement to apply for a permit if the Australian researcher wanted to send technology to an overseas researcher to show them how to develop or produce the pathogen or develop, produce or use the controlled apparatus. Under Option 3, Defence would not have the opportunity to assess the level of risk posed by these proposed overseas supplies.

NOTE: The threshold for DSGL technology controls for production/ development/ use is limited only to that portion of technology which is peculiarly responsible for achieving or extending the controlled performance levels, characteristics or functions of the controlled good.

BEST PRACTICES FOR IMPLEMENTING INTANGIBLE TRANSFER OF TECHNOLOGY CONTROLS

(Agreed at the 2006 Plenary)

Ensuring that control is exercised over intangible transfers of both dual-use and conventional weapons technology[1] (ITT) and is recognized by Participating States of the Wassenaar Arrangement as critical to the credibility and effectiveness of their domestic export control regime. As clear and precise control requirements facilitate effective export control implementation, the Participating States have adopted the following "best practices" for the implementation of export controls over intangible transfers of WA-controlled technology.

A. Recognizing the inherent complexities of export control regulation for ITT, Participating States of the Wassenaar Arrangement support:

1. Designing national laws and regulations with clear definitions of ITT via both oral and electronic means of transmission; including,

   a) Determination of what constitutes an ITT export; and,
   b) Determination of when an ITT export occurs;

2. Specifying in national laws and regulations the intangible technology transfers which are subject to export control;

3. Specifying in national laws and regulations that controls on transfers do not apply to information in the public domain or to basic scientific research; and,

B. Recognizing that national export control authorities benefit from the cooperation of industry, academia, and individuals in the regulation of ITT, Participating States of the Wassenaar Arrangement support:

1. Promoting awareness of ITT controls by such means as publication of regulatory handbooks and other guidance material, posting such items on the internet, and by arranging or taking part in seminars to inform industry and academia;

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[1] "Technology"

Specific information necessary for the "development," "production" or "use" of a product. The information takes the form of technical data or technical assistance. Controlled "technology" for the Dual-Use List is defined in the General Technology Note and in the Dual-Use List. Controlled "technology" for the Munitions List is specified in ML22.

Technical Notes

1. 'Technical data' may take forms such as blueprints, plans, diagrams, models, formulae, tables, engineering designs and specifications, manuals and instructions written or recorded on other media or devices such as disk, tape, read-only memories.
2. 'Technical assistance' may take forms such as instruction, skills, training, working knowledge, consulting services. 'Technical assistance' may involved transfer of 'technical data.'

2. Identifying industry, academic institutions, and individuals in possession of controlled technology for targeted outreach efforts and,

3. Promoting self-regulation by industry and academic institutions that possess controlled technology, including by assisting them in designing and implementing internal compliance programs and encouraging them to appoint export control officers.

C. Recognizing the importance of post-export monitoring and proportionate and dissuasive penalties to deter non-compliance with national ITT laws and regulations, Participating States support:

1. The imposition of a requirement on industry, academia, and individuals to keep records, for an appropriate period of time, that clearly identify all controlled technology transferred, the dates between which it was transferred, and the identity of the end-user of all intangible transfers of technology for which licenses have been issued that may be inspected by, or otherwise provided to, export control authorities upon request;

2. Regular compliance checks of those that transfer controlled technology by intangible means and,

3. The provision of training to export control enforcement authorities on appropriate investigative techniques to uncover violations of national controls on ITT exports or access to such specialist expertise;

4. Appropriate surveillance or monitoring, pursuant to national laws and regulations, of entities that are suspected by national export control or other relevant national government authorities of making unauthorized intangible transfers of controlled technology.

5. The sanctioning by national authorities of those under their jurisdiction that have transferred controlled technology by intangible means in violation of export controls.

D. Participating States also support:

1. The exchange of information on a voluntary basis concerning suspicious attempts to acquire controlled technologies, with appropriate authorities in other Participating States.

Definitions for consultation

Technology 'in the public domain'

(1) Technology will be 'in the public domain' if it:
- (a) is 'in the public domain'; and
- (b) meets the requirements of paragraph (5).

(2) Technology will be 'in the public domain' if it has been made available without restrictions upon its further dissemination (copyright restrictions do not remove technology from being 'in the public domain').

(3) The following are examples of technology that, if available to the public, are 'in the public domain':
- (a) technology published in a book, journal or newspaper;
- (b) technology published on the internet;
- (c) technology available as a subscription service;
- (d) technology distributed at a conference, public meeting or seminar, trade show or exhibition;
- (e) technology about a scientific principle taught as part of an accredited course at an educational institution; and
- (f) technology available in a patent.

(4) For paragraph (3)(d), information that is distributed at a conference, public meeting or seminar, trade show or exhibition is taken to be available to the public if it is available to a sector of the public.

(5) This paragraph sets out requirements for paragraph (1)(b).
- (a) It is a requirement that technology in the public domain has not entered the public domain in contravention of:
  - (i) a law of the Commonwealth; or
  - (ii) a law of a foreign country relating to security; or
  - (iii) a security classification that has been given to the information by:
    - (A) the Commonwealth; or
    - (B) the government of a foreign country.
- (b) It is a requirement that technology is not subject to a restriction on its access or use (other than a copyright restriction), for example, a security classification given to the information by:
  - (i) the Commonwealth; or
  - (ii) the government of a foreign country.

Technology used in 'basic scientific research'

'Basic scientific research' means experimental or theoretical work undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective.