"Australia's Technical Infrastructure - its Value and Importance to Trade"

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Abstract

The term *technical infrastructure* refers to the collection of activities, rules, principles and concepts that establishes, maintains and gives authority, traceability and confidence to the measurements, quantities (products) and qualities (services, relationships and standards) of a nations products. These products may be traded on both domestic and international markets.

Desired outcomes of an effective Australian technical infrastructure include:

- Assurance provided to both domestic and international purchasers of Australian products, that the purchase has complied with strict standards as enforced by internationally recognised organisations.

- Increased competitiveness, market share, innovation and lower operating costs for Australian industries and companies, through optimising trading environments as a result of removing technical barriers to trade.

Six organisations comprise the current Australian technical infrastructure:

- Standards Australia International Limited (SAI)
- The Joint Accreditation System of Australia and New Zealand (JAS-ANZ)
- The National Association of Testing Authorities (NATA)
- The National Measurement Laboratory (NML)
- The National Standards Commission (NSC)
- The National Analytical Reference Laboratory (NARL).

An efficient measurement infrastructure, for example, able to support Australian industry, is essential for international competitiveness and investment attraction. Australian commercial transactions based on trade measurement have an annual value in excess of A$350 billion. Accurate, reliable and credible measurements assist fair and equitable decision making, promote consumer confidence, support trade and commerce, and ensure public health and safety.

In the food sector, where measurement of pesticide residues, and chemical and microbiological contaminants are technical barriers to trade, measurement efforts have contributed significantly to ensuring market access for the Australian food export industry - which the latest figures show is worth around A$23 billion.

This paper considers the impact of the Australian technical infrastructure on barriers to trade, markets, costs of doing business for Australian industries and businesses, innovation by Australian industries and businesses, and strategic direction.

1. Introduction

During the 1990s I worked with Australia's sheep meat industry - assisting with its strategic direction and focus. In that time, when considering export market opportunities for sheep meat products into the global retail and food services sectors, I constantly heard the term *"technical barriers to trade"*.

Given that a range of existing and potential markets were being discussed, including several European countries, my immediate, albeit a naive perception of the term *"technical barriers to trade"*, was medieval Europe, and castles with defensive mechanisms that included moats and drawbridges - *to keep the enemy out!*

Reducing and/or eliminating the technical barriers to trade can be achieved via several strategies including:

- Mutual acceptance between trading countries of documentary standards, and
- International mutual recognition arrangements for accreditation (conformance) and metrology (measurement).

To better understand the technical barriers, and how Australia manages the modern day global trading environment including its opportunities and constraints, this paper presents commentary on:

- Aspects of trade;
- Some recent Australian Government developments with major trading partners, and
- Australia's technical infrastructure - what it is and does, and its benefits to Australian trade and economic growth.

For those who have been associated with Australia's *quality management* environment, several organisations will be well known: Standards Australia International Limited (SAI) and JAS-ANZ (the Joint Accreditation System of Australia and New Zealand). These two organisations are part of Australia's current *six-organisation technical infrastructure group* that comprises:

- Standards Australia International Limited (SAI)
- The Joint Accreditation System of Australia and New Zealand (JAS-ANZ)
- The National Association of Testing Authorities (NATA)
- The National Measurement Laboratory (NML)
- The National Standards Commission (NSC)
- The National Analytical Reference Laboratory (NARL).

2. Global Trade and Australia's Role

2.1 Some Facts

Since 1995, when the Uruguay Round agreements came into effect and the WTO was formed, Australia's **exports have grown from A$93 billion to A$151 billion**. Other key aspects of Australia's economy and trade include:

- Exports: 25% services and 75% products - primary and manufactured goods, mainly from mining and agriculture. In 2000/01, rural and mineral exports, including processed goods, accounted for 65% of total merchandise exports.
- Australia's seven major export trading partners account for 60% of exports: Japan (17%), USA (11%), South Korea (10%), New Zealand (6.5%), China (5.7%), the UK (5.7%) and Singapore (4.7%).
- Economic activity is focused on Australia's eastern seaboard (77% of GDP): NSW generates around 34% of Australia's GDP (US$385 billion in 2000/2001), Victoria 25% and Queensland 18%.
- As with most developed economies, the services sector generates the majority of Australia's GDP - over 78% in 2000/01. The largest services industry is finance, property and business services (17.9% of GDP in 2000/2001).
- The most rapidly growing services industry was communications, which expanded in real terms, at an annual average rate of more than 10% during the five years to 2000/01.
- Manufacturing accounted for 11.5% of GDP in 2000/01.
- Mining generated 4.6% of Australia's GDP during 2000/01, agriculture 3.1% and electricity, gas and water utilities 2.5%. Traditional commodities continued to head the table of export earners -petroleum, gold, iron ore, coal, wheat and beef, for example, led the way to a 29% increase in primary product exports.

  Sources: The *Economist Intelligence Unit* and the Australian Bureau of Statistics.

Australia, however, is no longer solely a resource-based economy. One of the features of the past fifteen years has been the growth of Australia's knowledge-based and tourism industries, and its emergence as a supplier of high-value manufactures and services.

2.2 Trade Strategy for Australia

In a trade policy strategy speech in April 2003 made by the Honorable Mark Vaille, MP, Australia's Minister for Trade, he commented that:

*"Our government has adopted a trade policy strategy of **competitive liberalisation** - a strategy that reflects the most ambitious trade agenda in Australia's history. In the past twelve months, we have concluded a Free Trade Agreement (FTA) with Singapore, begun negotiating FTAs with the US and Thailand, and advanced trade and economic agreements with China and Japan.*

We have signed a Closer Economic Partnership agreement, alongside New Zealand, with the ten ASEAN member countries, and we have re-invigorated the APEC agenda on issues affecting the Asia-Pacific region. We have ensured, as Chair of the Cairns Group, that it has become - along side the United States and European Union - the third force in the Doha Round of global trade negotiations.

All these initiatives - at the multilateral, regional, and bilateral levels - are part of our strategy of maximising trade opportunities with individual countries, in the Asia-Pacific, and globally. It is a strategy that is all the more important now that the Doha Round of multilateral trade negotiations - as expected - has stalled over agriculture, and where international economic conditions remain, at best, weak.

*Now is the time when we must sustain the momentum for trade and investment liberalisation - by doing what we can in APEC and other regional fora, and bilaterally through our individual trade initiatives What better way, in our own region, of demonstrating the benefits of trade and investment liberalisation, by forging a Free Trade Agreement with Singapore, and now with Thailand. **In the end, our trade strategy is about ensuring, in a difficult and uncertain trading environment, that our exporters achieve greater access to overseas markets as quickly, as broadly and as deeply as possible".***

Within APEC, there is a key objective of free and open trade: " …*to achieve the goal of free and open trade and investment in the region no later than 2010 for the industrialised economies and by 2020 for the developing economies".*

The Singapore-Australia Free Trade Agreement (SAFTA) is a landmark achievement. Singapore is already Australia's seventh largest trading partner. SAFTA, Australia's first bilateral free trade agreement since the conclusion of the CER agreement with New Zealand twenty years ago - offers exciting opportunities in the goods and services sectors to a wide range of Australian exporters.

Those opportunities will not be limited to the Singaporean market: a growing number of Australian companies view Singapore as an ideal base for their operations in the wider Southeast Asian region.

SAFTA will be fully consistent with WTO rules governing free trade agreements, both in terms of its comprehensive scope and the depth of liberalisation it delivers. As strong supporters of the WTO rules, this was an important objective for both countries. SAFTA's ambitious outcomes will support the active roles played by Australia and Singapore in the Doha Development Round of trade negotiations.

SAFTA - some key features

- All tariffs applying to trade in goods between the parties will be eliminated immediately. Rules of Origin are incorporated in the agreement to ensure that only those goods substantially produced in the territory of the parties qualify for the tariff exemption.
- A more open and predictable business environment will be established across a range of areas, including telecommunications regulation, competition policy, government procurement, technical standards, intellectual property, electronic commerce, customs procedures and business travel.
- Review provisions allow for additional commitments to be negotiated and additional areas to be covered as bilateral trade and investment develop over time.

2.3 Trade, Standards and Conformance

In another recent speech by Australia's Minister for Trade (Source: the Standards Australia web site), the Minister commented on trade, standards and conformance:

"The Government puts a high priority on an ambitious trade policy agenda because better market access for Australian exports is critical to generating wealth, creating jobs and raising living standards for all Australians. This is especially important in regional Australia where exports account for one in every four jobs.

To this end, we continue to rely on the expertise and engagement of the Australian Standards community, and look forward to fostering closer links over the coming months to ensure the Government's position in trade negotiations reflects Australia's commercial priorities.

Australia's longstanding commitment to an open, rules-based world trading system remains the bedrock of the Government's trade policy. As a medium-sized, export-dependent economy, Australia needs the stability and certainty afforded by effective World Trade Organisation [WTO] rules.

Since 1995, when the Uruguay Round agreements came into effect and the WTO was formed, Australia's exports have grown from Aust $93 billion to Aust $151 billion - an increase of more than 50% - and Australian exports have created 250,000 jobs.

The Government also plays an important role by creating, through its trade policies, the conditions in which Australian exporters can continue to flourish.

International Standards and conformity assessment play a vital role in improving efficiency of production and facilitating international trade that directly affects the well-being of Australians. Standards provide the technical underpinning for a number of WTO agreements, helping to ensure that trade flows smoothly and predictably.

As tariffs are progressively reduced, trade facilitation measures and other reforms directed at addressing barriers to trade in goods and services - including technical measures and customs rules and procedures - will assume even more importance.

Simply negotiating market access is not enough in the current trading environment. Australian exporters need to be able to get their product to consumers faster, cheaper and more safely.

The Government is keenly aware that Standards and conformance are central to trade facilitation reforms. The gains from improved international Standards and conformance mean reduced prices and increased quality and choices for consumers; reduced transaction and input costs for business; the promotion of innovation and excellence; and the adoption of new products, technologies and management methods.

Together, Standards and their accompanying tests act as an important confidence-building foundation for the exchange of goods and services - they reduce the costs of uncertainty.

With the current Doha Round of WTO negotiations focused on trade's vital role in promoting economic development and alleviating poverty, it is timely to remind ourselves of the benefits that sound Standards can bring to developing countries.

International Standards are an important source of technological know-how for economic development and the enhancement of capabilities to export and compete on global markets. They provide a valuable store of product, performance, safety and environmental specifications. The promotion of efficiency and innovation also works to reduce rates of environmental degradation.

Australia is actively pursuing the reduction of technical barriers to trade in relation to Standards and conformance through the WTO, Asia Pacific Economic Cooperation [APEC] and direct bilateral negotiations.

Through the WTO, Australia participates in the strengthening of international guidelines relating to conformity assessment procedures and quarantine regimes to ensure they are based on science and reflect Australian interests. We also monitor members' conformity with WTO obligations.

The progressive implementation of ***Mutual Recognition Arrangements [MRAs]*** *is an important part of APEC work on conformance. MRAs on Conformity Assessment enable Australian manufacturers to have their products tested and certified in Australia for compliance with the regulatory requirements of importing countries, reducing the time and cost for exporters in getting products to market. Australia is party to APEC MRAs covering electrical and electronic equipment, telecommunications equipment and foods and food products.*

APEC members have also made a commitment to align domestic standards in priority sectors by 2005, including in food labelling and manufacturing, and have also agreed to align all electrical safety and electromagnetic compatibility standards by 2008.

We have also negotiated bilateral multi-sector MRAs with the European Community, Singapore and the member states of the European Free Trade Association [Norway, Iceland and Liechtenstein].

2003 is another busy year for the Government's trade policy agenda with Australia continuing to pursue its trade objectives through mutually reinforcing multilateral, regional and bilateral trade initiatives.

The Doha Round of multilateral trade negotiations is the Government's first trade policy priority. The Round offers a vital opportunity for Australia to pursue agricultural trade reform and better access to world markets for its exporters. Australia's overall objective for the Round is to achieve significant improvements in market access - for agriculture, services and industrial products - as quickly and productively as possible. Through its active and constructive participation in all elements of the Doha Round negotiations, Australia is also working to maintain an open, rules-based international trading system and to help developing countries share in the benefits of trade liberalisation.

Australia is also pursuing complementary WTO-consistent regional and bilateral trade initiatives where these hold out the prospect of positive outcomes within a shorter timeframe than is possible at the multilateral level.

Key elements of this strategy include negotiating free trade agreements with the United States and Thailand; and developing initiatives aimed at strengthening and revitalising trade and economic relations with Japan and China. This work follows on from the successful finalisation of a free trade agreement with Singapore, which I expect to enter into force later this year. APEC's agenda for region-wide trade liberalisation and facilitation, and the AFTA-CER Closer Economic Partnership initiative are further examples of core activities in this area.

I commend the Australian Standards community on its strong commitment to Standards development. The ongoing reduction of technical barriers to trade - the detailed and practical work that makes a real contribution to Australian wealth and job creation - continues to rely on active Australian input and participation in international Standards development".

2.4 The Economic Costs of Terrorism

As part of its contribution to APEC's counter-terrorism work, Australia presented a paper to the APEC officials meeting at Chiang Rai, Thailand, in February 2003 which outlined terrorism's economic impact on Australia's region. The main points of the paper, prepared by the Economic Analytical Unit (EAU) of the Department of Foreign Affairs and Trade, were:

- The increased risk and prevalence of global terrorism is not only a major security concern, but also looms as a threat to regional economic prosperity. Terrorist acts already impose significant costs on all economies.

- In the short term, the costs include loss of life, destruction of property and depression of short-term economic activity. In the medium term, unchecked, terrorism raises the cost of many international transactions and creates uncertainty, reducing confidence and increasing risk perceptions and premiums, reducing trade flows, investment and economic growth.

  For example, a recent study found new anti-terrorism trade security measures required post-September 11 2001 cost from 1% to 3% of the value of North American trade flows - a US$60 billion to US$180 billion impost on all world trade flows. Analysts estimate the impact on US investment of increased uncertainty post-September 11 has cut US GDP by 0.2%; the International Monetary Fund estimates the United States' total loss of output from all terrorism-related costs could be as high as 0.75% of its GDP.

- The economic costs of terrorism are transmitted far beyond the country of immediate impact. Regional and international economic linkages mean terrorist events in one economy have flow-on effects, imposing significant costs on other regional economies. Hence all economies have an interest in cooperating to reduce terrorism.

- Unchecked terrorism may impose higher costs on developing economies relative to their GDP - because of their greater reliance on trade and capital inflows. One major study found developing economies could boost their economic growth by up to 1.25% per year by improving their economic security to international best practice levels.

- Any economy which fails to combat terrorism and prevent its financing therefore could incur significant costs in terms of lost investment and trade opportunities and may be marginalised from many international transactions.

- For APEC, efforts to facilitate trade and implement security initiatives are mutually reinforcing. As well as reducing exposure to terrorist attack, technological advances to increase security are likely, for instance, to increase the efficiency of cargo handling and people movement, leading to lower trade costs and more efficient trade flows.

- The positive economic impact from implementing measures to guard against terrorism and negative spillovers from inaction make a collective international approach the most efficient response to terrorism. APEC has established a suite of measures to secure the movement of goods and people, halt terrorist financing and promote cyber-security.

  Source: The Australian Department of Foreign Affairs and Trade.

3. Australia's Technical Infrastructure

3.1 What is it? What does it do?

The term “technical infrastructure” refers to:

- The collection of activities, rules, principles and concepts that establishes, maintains and gives authority, traceability (increasingly to international norms) and confidence to the measurements, quantities (products) and qualities (services, relationships and standards) of a country's products.

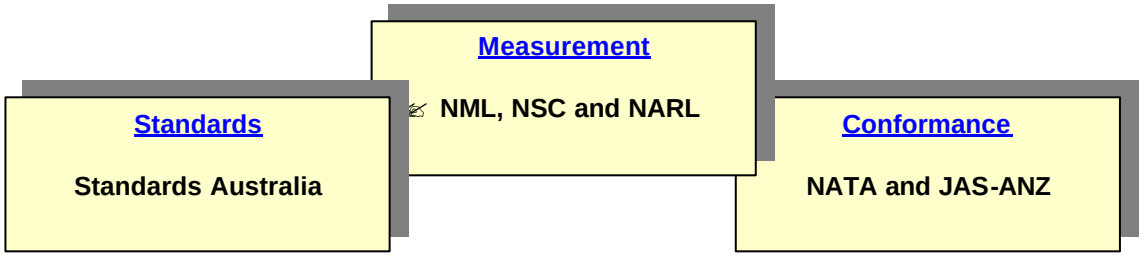
It is these key features of the technical infrastructure that support, guide and often direct the production and provision of goods and services, as well as provide confidence in Australian products.

The six organisations that currently comprise Australia's technical infrastructure are:

- Standards Australia International Limited (SAI)
- The Joint Accreditation System of Australia and New Zealand (JAS-ANZ)
- The National Association of Testing Authorities (NATA)
- The National Measurement Laboratory (NML)
- The National Standards Commission (NSC)
- The National Analytical Reference Laboratory (NARL).

The organisations maintain a close relationship with cross representation on each other's Boards.

The functions of the six organisations can be summarised into three major roles:



The term '"technical infrastructure" can be realistically and practically replaced by **"Measurement, Standards and Conformance infrastructure"**

The roles of the six organisations are:

Organisation	Role
SAI **Standards Australia International Limited**	SAI is a public company that prepares and publishes most of the voluntary technical and commercial standards used in Australia. SAI prepares standards through an open process of consultation and consensus in which all interested parties are invited to participate. It has extensive global business and networking activities. SAI's principal activities focus on business-to-business services based on the creation, distribution, sharing and application of knowledge using a variety of technologies.
JAS-ANZ **Joint Accreditation System of Australian and New Zealand**	JAS-ANZ was established in 1991 by a treaty between the governments of Australia and New Zealand. It operates on a self-funding, non-profit basis and is controlled by a Governing Board. JAS-ANZ´s primary function is the accreditation of bodies that undertake conformity assessment. Accreditation of these bodies by JAS-ANZ enhances their status and authority, both nationally and internationally, and strengthens the international competitiveness of Australian and New Zealand industry. The main aim of this system is to enhance trade and achieve international recognition of the excellence of Australian and New Zealand goods and services. JAS-ANZ also develops mutual recognition in overseas markets for Australian and New Zealand producers, exports and personnel, establishes and manages links with counterpart bodies, and establishes mutual recognition agreements with other accreditation bodies and relevant organisations with national or regional coverage on a bilateral and multilateral basis.
NATA **National Association of Testing Authorities**	NATA is the world's oldest association of accredited laboratories (established in 1947) and is an internationally recognised laboratory accreditation provider. It is recognised by the Australian Government as the national authority for accreditation of laboratories. It conducts tests and measurements in a wide spectrum of technical fields, including laboratories performing tests and studies in accordance with the OECD Principles of Good Laboratory Practice, and for accreditation of producers of certified reference materials.
NML **National Measurement Laboratory**	NML is a National Facility within the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Measurement drives the continuous development of science, technology and industrial production and provides the basis for successful trade and commerce. It is the foundation for environmental monitoring, occupational health and safety and consumer confidence and protection. Every nation has a profound reliance on the ability to measure. NML is the reference point for the national measurement system and is Australia's link into the international measurement infrastructure. Its work is vital to underpin Australia's negotiation of mutual recognition agreements with its trading partners and essential for the credibility of measurement and testing reports generated in Australia. NML's objectives include: ✍ Ensuring international credibility and traceability for Australia's standards through an active program of research in leading-edge metrology and through international measurement comparisons ✍ Maintaining a high level calibration service to meet the needs of Australian industry, trade, commerce, regulators, defence forces and the community at large ✍ Supporting the standards and conformance infrastructure in Australia in meeting domestic and international responsibilities.
NSC **National Standards Commission**	The NSC is a Commonwealth statutory authority established in 1950 and operating under the National Measurement Act 1960. NSC is responsible for advising the Government on the scientific, technical and legislative requirements of Australia's national measurement system, and has specific responsibilities for coordinating the national measurement system, ensuring that trade measurement instruments comply with international and national legal metrology standards, and for the completion of metrication.
NARL **National Analytical Reference Laboratory**	NARL was established within the Australian Government Analytical Laboratories (AGAL) in 1997 to help provide Australian scientists with the **chemical standards** they need to make reliable measurements. AGAL is the Australian Government's principal agency for the provision of analytical services in chemistry, microbiology, and materials and building science. AGAL plays a strategic role in protecting Australian public health and safety, the environment and international trade by providing Australia with an internationally recognised chemical and microbiological measurement infrastructure that has the capability and capacity to respond to national needs.

National Measurement Institute (NMI)

The Commonwealth Government announced on 13 May 2003 that it will establish the National Measurement Institute - to be operating by 1 July 2004.

The National Measurement Institute will bring together into a single agency Australia's national functions in **physical, chemical and biological measurement**, as well as **legal metrology**.

The new Institute will provide world-class measurement standards and services for Australian industry; and, in doing so, will facilitate trade and assist industry innovation.

It will be formed by amalgamating three current organisations that provide measurement services for government and industry:

- The National Measurement Laboratory (NML),
- The National Standards Commission (NSC), and
- The Australian Government Analytical Laboratories (AGAL).

Until the National Measurement Institute is formally established, the three organisations will continue to operate as normal. Their current functions and services will not be affected.

3.2 Australia's Technical Infrastructure - its Value and Importance to Trade?

In broad terms, the desired outcomes of an effective Australian technical infrastructure include:

- Assurance provided to both domestic and international purchasers of Australian products, that the purchase has complied with strict standards as enforced by internationally recognised organisations.

- Increased competitiveness, market share, innovation and lower operating costs for Australian industries and companies, through optimising trading environments as a result of removing technical barriers to trade.

The ***value and importance*** of the technical infrastructure group is presented via examples of recent achievements and contributions by the Australian technical infrastructure organisations. These include:

1. **Reliable chemical measurements** are vital to many aspects of social and economic life, including public health, environmental control, industrial productivity, trade innovation and government regulation.

   International trade and other cross-border issues, such as environmental pollution, require measurements made in one laboratory to be comparable with similar measurements made in another laboratory in another part of the world. To achieve this, a structured international measurement system is required, based on common standards that have been shown to be equivalent. Increasing numbers of countries are establishing facilities to serve both national needs and to contribute to the international system. Their work builds on both the extensive achievements of analytical measurement science and the concepts and systems of metrology developed by physical measurement scientists.

   An efficient measurement infrastructure is able to support Australian industry, and is essential for international competitiveness and investment attraction. Australian commercial transactions based on trade measurement have an annual value in excess of A$350 billion. Accurate, reliable and credible measurements assist fair and equitable decision making, promote consumer confidence, support trade and commerce, and ensure public health and safety.

   In the food sector alone, where measurement of pesticide residues, and chemical and microbiological contaminants are technical barriers to trade, measurement efforts have contributed to ensuring market access for the Australian food export industry - worth around A$23 billion.

2. Measurement traceability being a critical factor in Australia winning major aerospace contracts worth more than A$100m.

3. The NML developing gas-mixture standards for energy content to assist with Australian energy contracts for the export of both CNG and LPG.

4. Protection against dumping of inferior products into the Australian market - an example being the EMC testing of electrical components and equipment (for such products, Australian has approximately A$1.5 billion worth of exports and A$15 billion imports).

5. Tourism, a major export industry for Australia and health and safety, and the potential impact of the Sydney 1999 Cryptosporidium crisis, was traced to a measurement problems (in 2000-01, international visitors to Australia consumed an estimated A$16.1 billion worth of goods and services. In 2009-10, the tourism industry is expected to generate around A$30 billion in export earnings).

6. Comments (Source: Standards Australia's website) made in late 2002 by Chris Whitworth, General Manager Special Projects for Alstom Power, which operates an active local and export business in capital equipment and services to the power generation industry, as part of Alstom Australia, the company which also serves Australia's power transmission, power distribution, and transport [rail and marine] industries, included:

   ".....Measurement Standards and Conformance are a vital part of that infrastructure and Australia's industries require that the security of this infrastructure be assured while they maintain their focus on the tactics of global and local endeavours.....

….Simplistically:

Where would we be if a 'millimetre' or a 'micrometre' used in making an Australian product didn't coincide with the millimetre or micrometre expected by a foreign client? How about an "Australian" tonne of wheat being lighter than the tonne a foreign purchaser thought he was getting?

Simple though it might seem, trade and commerce need the maintenance and traceability of standards, globally and who is to do this? Left up to industry, it is likely that a "seller's" tonne would become rather light and a "purchaser's" tonne would become somewhat heavier.

The activities of a viable Measurement Standards and Conformance Infrastructure go beyond simply caring for fundamental standards. There is an ongoing need to seek simplicity and uniformity, to devise standards for new technologies and to actively participate in the development of such infrastructure internationally.

In my principal field of operation, steam boilers for the power industry, standards have played an important role for over a century. The frequency and consequences of boiler explosions in early days led to the development and ongoing maintenance of documented standards to control the integrity of design, materials, fabrication and operation.

These documented standards have become international and it is their availability, control and acceptance that empowers Alstom Power Australia, to design and supply power plant equipment for projects in USA, Canada, Thailand, Vietnam, Malaysia and New Caledonia.

……Quality, measurement and analytical Standards are important to the power industry in many ways. For example:

Quality: Australia's adoption of internationally recognised quality standards provided entry for our industries to international markets, but adoption alone was not enough for ongoing business. The maintenance of our reputation as a supplier of quality products and services requires constant attention to the management, accreditation and certification of Australia's technical infrastructure as well as constant attention to our companies' quality systems.

Plant Performance: Competition has resulted in modern power plant being designed less conservatively than previously. With financial consequences of under-performance now swamping the slender profit margins of such plant, the techniques and accuracy of performance measurement have become crucial to business survival. Accreditation and traceability of measurement standards and instrument calibration is essential to the fair and equitable assessment of plant performance, especially when working internationally.

Greenhouse Gas Emissions: Australia is more reliant on cheap electricity from fossil-fuelled power stations than any other country in the developed world. As such, it has the most to lose under the imposition of a carbon tax. Already, a trade in renewable energy certificates has been established, to encourage the installation of renewable forms of electricity generation. This trade is the precursor to international carbon trading based on GHG mitigation [reduction and absorption], yet the measurement of GHG emission is far from accurate.

….The CSIRO has undertaken work on producing gas mixtures for standardising GHG measurement. It also plays a leading international role in measuring atmospheric GHG levels, in developing new methods to make and calibrate these measurements and in developing models for better management of regional emissions. All of these activities are vital to Australia in assessing its contribution to this global problem, thereby helping to avoid unfair imposts on the cost of power station boilers and the cost of generating electricity in Australia.

Environmental Monitoring: Modern power stations are expected and required to prevent degradation of the environment. Putting aside the matter of GHG, other fluid releases must be controlled also. The matter of standards is extremely important in this regard as it is not sufficient for a specification to simply require, for example, that only "pure" water can be released - after all, how pure is "pure". Clearly, analysis, measurement and Standards activities are essential, and we are fortunate to have organisations such as the Australian Government Analytical Laboratories (AGAL) to provide world-class expertise in this area.

…..As Australian industries enter higher technologies that entail work at molecular levels, the need for secure Measurement Standards and Conformance Infrastructure is even more important. The outlook is for more demanding Standards of measurement.

If we aspire to improve our already-high standard of living and provide meaningful employment opportunities for future generations we must compete, win and hold a place in high value-adding enterprise of the world.
For this, it is vital that our Measurement Standards and Conformance Infrastructure be secure, efficient and readily available to serve the needs of all sectors of Australia's industry and commerce - in fact, this will be essential to just maintaining our position in primary production and services industries."

7. The Toy Industry

"More than forty representatives from the international toy industry met in Sydney in December 2002 in an attempt to reduce technical barriers to trade which are restricting the sale and purchase of toys around the world…. The members of the ISO technical committee for toy safety, sought to reduce the number of toy safety Standards around the world from more than fifty to just one.

The ISO Vice President for Technical Management and the Chief Executive of Standards Australia, Mr Ross Wraight, said: 'More than a creature was stirring in Sydney as toy testers, regulators, technical experts gathered to resolve long standing issues effecting the international toy trade' .

Among the issues being debated by the international toy tsars from China, Thailand, the United States, the United Kingdom, New Zealand, Sweden, Demark, Holland, Korea and Australia, were acoustic requirements, flammability, choking hazards and corporate and social responsibility. Different safety and regulatory requirements across the world have acted as barriers to trade for too long, as toy manufacturers are required to carry out additional tests before their products can enter different regional market places, said Mr Wraight.

According to Mr Richard Hayman of the Australian Toy Association: 'The development of International Standards are a plus for both local manufacturers and the overseas distributors as they will facilitate trade and offer a consistent level of safety around the world. The proposed uniform requirements will draw on the best element of each of the national Standards and seek to develop a common set of guidelines on everything from acoustics, flammability to toxicity.'

…'From now on, when Santa and his reindeers take to the air with a sleigh full of toys he can be comfortable in the knowledge that he will no longer have to stop at national borders on Christmas Eve,' said Mr Wraight."

Source: Standards Australia Web site, taken from *"Toy experts tackle technical barriers to trade"* by Tom Godfrey.

8. Mutual Recognition Agreements (MRAs)

As tariff barriers to trade have fallen, standards, technical regulations and procedures for assessing conformity have become increasingly prominent as impediments to international trade. The OECD has estimated that, depending on the product, the differing standards and technical regulations in different markets, combined with the need for multiple testing and certification, may constitute between 2% and 10% of the overall cost of production.

The Australian Department of Industry, Tourism and Resources advises on a variety of domestic and international matters relating to technical and regulatory barriers to trade. This includes negotiating and maintaining Mutual Recognition Agreements (MRAs) on conformity assessment. **These agreements eliminate duplicative testing and result in easier market access and reduced costs to exporters.** This includes *The Australia-European Community Mutual Recognition Agreement* (EC-MRA) **-** the world's first mutual recognition agreement on conformity assessment, is now fully operational. Many Australian exporters have reported that being able to have conformity assessment undertaken by Australian bodies (as distinct from those of the importing country) has provided savings in both time and money and has given greater certainty to the export process.

The operation of MRAs has a secondary benefit of providing a vehicle to facilitate an environment conducive to greater harmonisation of standards and conformance systems.

Finally, the European Organisation for Conformity Assessment (EOTC) is conducting a study on the *Evaluation of the Economic Impact of Conformity Assessment*. The objective of this study is to develop indicators of the economic impact of Conformity Assessment procedures for industrial products circulating within the Single Market. These indicators will be used to carry out an evaluation of the economic impact of Conformity Assessment in the Single Market and should allow the identification of the main sources of the costs/economic impact and to determine the means to reduce this impact, especially in terms of best practices.

The study will aim to highlight the differential costs of conformity assessment across an internal market for similar sectors/products and their economic implications.

The overall approach to the analysis of the economic impact of conformity assessment is to study the implications for all the affected parties. The research will analyse both the demand (manufacturers and distributors) and supply sides (conformity assessment bodies) for conformity assessment services, as well as the effects on and from stakeholders (product users/consumers, standardisation bodies, chambers/trade associations and public authorities).

4. Future Directions for Australia's Technical Infrastructure - where to by 2010?

As the world economy continues to "regionalise and globalise", some of the proposed trends that will unfold involving Australia's technical (measurement, standards and conformance) infrastructure group from now until 2010 include:

- Greater interaction and consulting with Australian industry for technology transfer, and expansion into new and emerging industries and sectors.
- Increased innovation by confronting measurement challenges in different environments and by providing practical solutions to industry and commerce.
- Strengthening the international image and presence of the infrastructure group, particularly in the Asia-Pacific region, and having a greater international role and influence.
- Consolidation of similar organisations within the region eg the creation of Asia-Pacific organisations as distinct from Australian organisations.
- Increased measurement traceability aligned to international/national standards.

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- The Australian Bureaus of Statistics
- The Australian Department of Industry, Tourism and Resources
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- The UK Economist Intelligence Unit
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- The six organisations that comprise Australia's technical infrastructure,

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