The benefits & concerns of public data availability in Australia: a survey of security experts

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Background

- Critical Infrastructure Protection (CIP) is traditionally focused on the following stages
  - Vulnerability identification
  - Risk assessment
  - Risk management
- Use of ICTs has simplified the ability to transmit data relating to critical infrastructure
- Many, including Government bodies, have embraced the benefits of providing great amounts of data
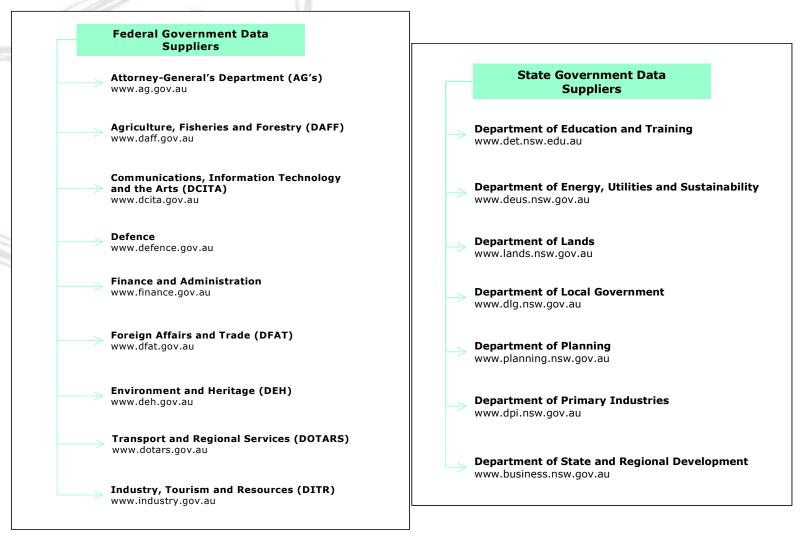- The concerns have largely been overlooked

Previous studies

- A US study conducted in 2003 introduced another dimension to the CIP process
- The study addresses the concept of 'sensitive but unclassified' data & its affects on the CIP process
- This study adapts the US study to an Australian setting to determine
  - How much data is publicly available concerning Australia's CI?
  - What are the benefits & concerns with respect to CIP?
  - How can we address the censorship versus open information access debate?
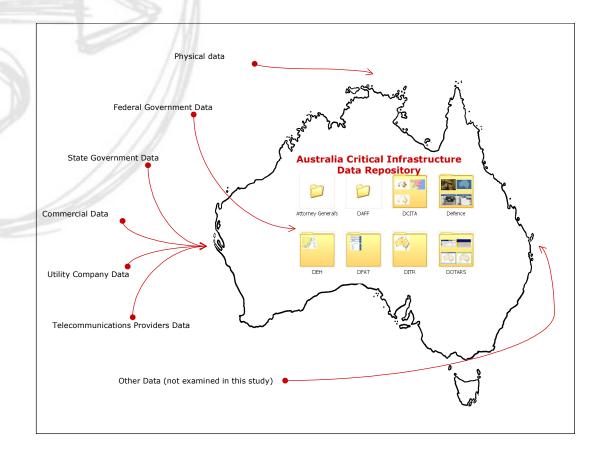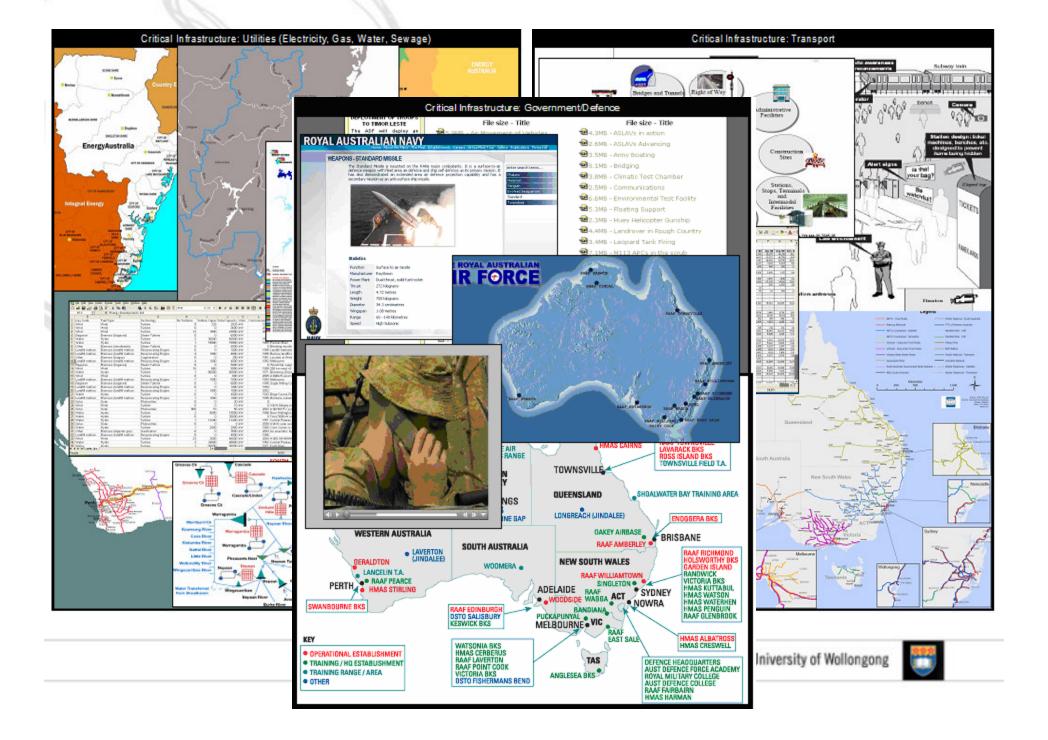
'Sensitive but unclassified' data

Federal Government Data Suppliers

Attorney-General's Department (AG's)
www.ag.gov.au

Agriculture, Fisheries and Forestry (DAFF)
www.daff.gov.au

Communications, Information Technology and the Arts (DCITA)
www.dcita.gov.au

Defence
www.defence.gov.au

Finance and Administration
www.finance.gov.au

Foreign Affairs and Trade (DFAT)
www.dfat.gov.au

Environment and Heritage (DEH)
www.deh.gov.au

Transport and Regional Services (DOTARS)
www.dotars.gov.au

Industry, Tourism and Resources (DITR)
www.industry.gov.au

State Government Data Suppliers

Department of Education and Training
www.det.nsw.edu.au

Department of Energy, Utilities and Sustainability
www.deus.nsw.gov.au

Department of Lands
www.lands.nsw.gov.au

Department of Local Government
www.dlg.nsw.gov.au

Department of Planning
www.planning.nsw.gov.au

Department of Primary Industries
www.dpi.nsw.gov.au

Department of State and Regional Development
www.business.nsw.gov.au

Attorney-General's Department (AG's)

A national security section mentioning the role of the department in coordinating security efforts across Australia. The site provides external links with additional information.

Relevant link(s):
http://www.ag.gov.au/agd/WWW/agdHome.nsf/Page/
National_Security_National_Security_
http://www.ag.gov.au/agd/www/NationalS
File(s) on CD:
N/A, navigate through the links above for fu

Report containing how Australia will be prote
is, what Australia aims to achieve with respe
produced by the Department of Foreign Affa
reproduced) in multiple formats.

Relevant link(s):
http://www.pmc.gov.au/publications/protec
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Defence

Defence annual report for 2005-2004 and Defence public environment report, both
contain   maps   concerning   Australia's   significant   defence
ments.

.defence.gov.au/budget/04-
wnloads/0405_DAR_08_append.pdf

Agriculture, Fisheries and Forestry (DAFF)

Supply chain food production and trade statistics, from 2005.

Relevant link(s):
http://www.daff.gov.au/content/publications.cfm?Category=
Agricultural%20Industries%20and%20Food&ObjectID=A3D38C08-413A-4211-
B34B83CF5A8459C6
http://www.daff.gov.au/corporate_docs/publications/pdf/food/afs2005_
final_revised.pdf

eral\DAFF\Food statistics.pdf
tion, containing information relating to categories including the
stries and food, national resource management, among others.

f.gov.au/content/publications.cfm

ove links to browse the vast publications library

ry.gov.au/vf/
ry.gov.au/vf/vf.html

deral\Defence\Virtual fleet tour 1.jpg
deral\Defence\Virtual fleet tour 1.jpg

s, including such things as communicating in the field, infantry and
esting.

fence.gov.au/army/video/videos.htm
fence.gov.au/army/video/Comms1.mpg
File(s) on CD:
Government\Federal\Defence\Army communication.mpg

Australian Army website provides link to the defence library with many categories
including emergency management, and defence related statistics (and their
location).

Relevant link(s):
http://www.defence.gov.au/library/
File(s) on CD:
N/A, see link above

Air Force video clips, including such things as exercises and images of employees at
work.

Relevant link(s):
http://www.defence.gov.au/raaf/interactive/video.htm
File(s) on CD:
N/A, videos can be downloaded from the provided above

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Transport and Regional Services (DOTARS)

Reference to the Bureau of Transport and Regional Economics. The Bureau
permits access to statistics on various areas on transport, including general
transport, aviation, land transport, maritime and regional. An example of the
statistics available is the up-to-date Australian transport statistics report for
2006 with maps and associated data (see file provided).

Relevant link(s):
http://www.btre.gov.au/statistics/statsindex.aspx
http://www.btre.gov.au/statistics/general/trnstats05/trnstats.aspx
File(s) on CD:
Government\Federal\DOTARS\Transport statistics.pdf

Maps on the Auslink road network and international airports and the railways and
sea ports across Australia.

Relevant link(s):
http://www.btre.gov.au/statistics/general/trnstats05/trnstats.aspx
http://www.btre.gov.au/statistics/general/trnstats05/auslink_intair.jpg
http://www.btre.gov.au/statistics/general/trnstats05/rail_seamap.jpg
File(s) on CD:
Government\Federal\DOTARS\Road & airports.jpg
Government\Federal\DOTARS\Railways & sea ports.jpg

Aviation statistics and airport traffic data, encompassing airline passenger statistics
for both international and domestic airlines.

Relevant link(s):
http://www.btre.gov.au/statistics/aviation.aspx
http://www.btre.gov.au/statistics/aviation/international_
time_series_downloads.aspx
http://www.btre.gov.au/statistics/aviation/domestic_
time_series_downloads.aspx
File(s) on CD:
Government\Federal\DOTARS\Flights & passengers.xls
Government\Federal\DOTARS\Domestic airlines.xls

Land transport statistics section, which provides links to external agencies such as
the Australian Bureau of Statistics and the Australasian Railway Association.

Relevant link(s):
http://www.btre.gov.au/statistics/statsindex.aspx
File(s) on CD:
N/A, refer to the link above

Maritime data, including shipping and ports statistics such as port-specific statistics.

Relevant link(s):
http://www.btre.gov.au/statistics/maritime.aspx
http://www.btre.gov.au/statistics/maritime/parc-fremantle.aspx
File(s) on CD:
Government\Federal\DOTARS\Port statistics.jpg

2006 report on regional Australia, including statistics, maps and explanations.

Relevant link(s):
http://www.btre.gov.au/statistics/regional/regstats/regstats.aspx
http://www.btre.gov.au/statistics/regional/regstats06/Australias_
Regions_06.pdf
File(s) on CD:
Government\Federal\DOTARS\Regional report.pdf

CI data repository

Physical data

Federal Government Data

State Government Data

Commercial Data

Utility Company Data

Telecommunications Providers Data

Other Data (not examined in this study)

Australia Critical Infrastructure Data Repository

Attorney General's   DAFF   DCITA   Defence

DEH   DFAT   DITR   DOTARS

Critical Infrastructure: Utilities (Electricity, Gas, Water, Sewage)

Critical Infrastructure: Transport

Critical Infrastructure: Government/Defence

ENERGY AUSTRALIA

EnergyAustralia

Integral Energy

ROYAL AUSTRALIAN NAVY

WEAPONS - STANDARD MISSILE

The Standard Missile is mounted on the RAN's major combatants. It is a surface-to-air defence weapon with fleet area air defence and ship self defence as its primary mission. It has also demonstrated an extended area air defence projection capability and has a secondary mission as an anti-surface ship missile.

Statistics

Function	Surface-to-air missile
Manufacturer	Raytheon
Power Plant	Dual-thrust, solid fuel rocket
Thrust	272 kilograms
Length	4.72 metres
Weight	708 kilograms
Diameter	34.3 centimetres
Wingspan	1.06 metres
Range	60 - 148 kilometres
Speed	High Subsonic

THE ROYAL AUSTRALIAN AIR FORCE

File size - Title	File size - Title
	4.3MB - ASLAVs in action
	2.6MB - ASLAVs Advancing
	3.5MB - Army Boating
	5.1MB - Bridging
	3.8MB - Climatic Test Chamber
	2.5MB - Communications
	6.6MB - Environmental Test Facility
	5.3MB - Floating Support
	2.3MB - Huey Helicopter Gunship
	4.4MB - Landrover in Rough Country
	3.4MB - Leopard Tank Firing
	7.1MB - M113 APCs in the scrub

HMAS CAIRNS
LAVARACK BKS
ROSS ISLAND BKS
TOWNSVILLE FIELD T.A.

TOWNSVILLE

QUEENSLAND

SHOALWATER BAY TRAINING AREA

LONGREACH (JINDALEE)

ENOGGERA BKS

OAKEY AIRBASE

BRISBANE

RAAF AMBERLEY

RAAF RICHMOND
HOLSWORTHY BKS
GARDEN ISLAND
RANDWICK
VICTORIA BKS
HMAS KUTTABUL
HMAS WATSON
HMAS WATERHEN
HMAS PENGUIN
RAAF GLENBROOK

RAAF WILLIAMTOWN

SINGLETON

NEW SOUTH WALES

WESTERN AUSTRALIA

LAVERTON (JINDALEE)

SOUTH AUSTRALIA

WOOMERA

GERALDTON

LANCELIN T.A.

PERTH   RAAF PEARCE
HMAS STIRLING

SWANBOURNE BKS

ADELAIDE   RAAF WAGGA   ACT   SYDNEY
NOWRA

WOODSIDE

RAAF EDINBURGH
DSTO SALISBURY
KESWICK BKS

BANDIANA
PUCKAPUNYAL
MELBOURNE   VIC

RAAF
EAST SALE

HMAS ALBATROSS
HMAS CRESWELL

WATSONIA BKS
HMAS CERBERUS
RAAF LAVERTON
RAAF POINT COOK
VICTORIA BKS
DSTO FISHERMANS BEND

TAS

ANGLESEA BKS

DEFENCE HEADQUARTERS
AUST DEFENCE FORCE ACADEMY
ROYAL MILITARY COLLEGE
AUST DEFENCE COLLEGE
RAAF FAIRBAIRN
HMAS HARMAN

KEY
- OPERATIONAL ESTABLISHMENT
- TRAINING / HQ ESTABLISHMENT
- TRAINING RANGE / AREA
- OTHER

University of Wollongong

Survey

- Objectives
  - Gauge attitudes of security experts
  - Work to towards a solution to address the censorship vs. open access issue

each stakeholder, indicate which data elements should be made available by checking the boxes.

CRITICAL INFRASTRUCTURE	STAKEHOLDER			
	Australian Government Bodies (Federal & State)	Operators of Critical Infrastructure	Educational Institutions & Research Networks	General Public (Citizens)
Major Defence Sites	☐	☐	☐	☐
Telecom Exchanges	☐	☐	☐	☐
Sewage Outfalls	☐	☐	☐	☐
Banks (Financial Hubs)	☐	☐	☐	☐
Schools	☐	☐	☐	☐
Cultural Icons	☐	☐	☐	☐
Gas Pipelines	☐	☐	☐	☐
Shopping Malls	☐	☐	☐	☐
Dams	☐	☐	☐	☐
Hospitals	☐	☐	☐	☐
Places of Worship	☐	☐	☐	☐
Electricity Grids	☐	☐	☐	☐

8. What INFORMATION TECHNOLOGY and NON-TECHNICAL measures do you think may assist in protecting public data from potential misuse in Australia?

_____
_____
_____
_____

Results: profile of respondents

- 21 responses, about 50% from government sector
- Experts expressed a heavy reliance on use of free public data
- Uses include
  - Risk assessment/management activities
  - Government intelligence
  - Business intelligence
  - Service provisioning
  - Research

Results: benefits & concerns

- Benefits
  - Promoting community trust
  - Facilitating immediate response in time-critical situations
  - Assisting in daily operations in certain occupations

- Concerns
  - Impact on national security efforts, & therefore CIP
  - Misuse, including crime, service disruption, vandalism, identity theft/fraud
  - Negative impact on privacy & confidentiality

Unrealistic to completely restrict access

Avoid becoming "secretive, scared society"

Avoid "relying on security through obscurity"

"CONCERNS ONLY"

"No major benefits"

Access should be controlled

Results: achieving the balance

- Common thread in survey
  - info should be available on "need to know basis" & for legitimate purposes
- Achieving the balance will require the combination of
  - Grading system
  - Other non-technical measures
  - Technical solutions

Stakeholder matrix

- Sensitivity-based grading system

	Australian Government Bodies	Operators of CI	Education Institutions & Research Networks	General Public
Major Defence Sites	100	58	32	16
Telecom Exchanges	100	89	50	17
Sewage Outfalls	100	95	68	53
Banks (Financial Hubs)	89	74	47	32
Schools	100	79	84	79
Cultural Icons	84	53	74	74
Gas Pipelines	100	79	42	32
Shopping Malls	84	89	68	84
Dams	100	79	47	37
Hospitals	100	84	63	74
Places of Worship	83	67	67	89
Electricity Grids	94	83	58	17

Key: Classified   Restricted   Unclassified

Non-technical solutions

- "Access control matrices"
- Legal & licence agreements
- Legislation & penalties
- Unambiguous policies
- Developing a register of approved users & defining terms of use
- Limiting sharing
- Onsite physical security
- Coordinated, whole of Government approach
- "Common sense"

Technical solutions

- Secure networks not displayed to the public
- Access control & password protection
- Security clearance for access to sensitive data
- Review of technical security techniques to measure their effectiveness

Outcomes & future direction

- One solution alone is not sufficient
- Rather, a solution that targets specific stakeholders is required
- "a government cannot hope to achieve a comprehensive approach to critical infrastructure protection if they are giving away data about their own infrastructure"
- Many elements need to be considered, both non-technical & technical in nature
- Looking at the issue from an alternative viewpoint by "facing the root problems", in an attempt to limit & address their causes

Thank you