



# the interoperability challenge

**DOING IT BETTER**  
**INTEROPERABILITY WORKING GROUP**  
**Position Paper**  
*Version 0.5 (public draft)*



**MONASH** University



## The Interoperability Challenge

*Doing IT Better Interoperability Working Group Position Paper (Version 0.5 [public draft])*  
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*Doing IT Better* ([www.doingitbetter.net.au](http://www.doingitbetter.net.au)), a three-year project to build ICT capacity in the Victorian community services sector, is a social justice initiative of the Centre for Community Networking Research (Faculty of Information Technology, Monash University ([www.ccnr.net](http://www.ccnr.net))) and the Victorian Council of Social Service ([www.vcross.org.au](http://www.vcross.org.au)), generously funded by a foundation.

The Doing IT Better Interoperability Project has its genesis in work undertaken by the Centre for Excellence in Child and Family Welfare's *Knowledge Broker* role (generously supported by the Telstra Foundation and the Alfred Felton Chair in Child and Family Welfare, located in the School of Social Work at the University of Melbourne) — and in particular the paper *Towards a futures strategy for the Victorian community services sector: "A knowledge perspective"* presented at the 2007 VCOSS Congress (Vines, 2007).

Other related articles prepared by the IWG include:

- Introduction to the Interoperability Working Group
- Cooperative federalism, social inclusion and interoperability

These can be downloaded from the IWG website: [www.doingitbetter.net.au/issues/interoperability.htm](http://www.doingitbetter.net.au/issues/interoperability.htm)

# The interoperability challenge

## 1. Background

The growing dependency on information and communication technologies (ICTs) within the Victorian community sector presents significant challenges for community service organisations (hereafter CSOs). Typically, CSOs focus their limited resources on clients, service delivery and service outcomes; this leaves limited capacity at both the individual CSO and sector-wide levels to progress a strategic vision in relation to support systems infrastructure, especially ICT support systems.

The Doing IT Better Interoperability Working Group<sup>1</sup> (IWG) has formed to facilitate and progress the development of a vision for data and information management within the community sector. In particular, the working group aims to address the needs of individual CSOs by taking their perspective into data and information management debates; and in doing so, to bolster sector development strategies by guiding individual CSOs' ICT investment and management decisions.

The achievement of three very specific outcomes (with regard to data and information management practices and systems) is at the heart of this work: effective governance, content sustainability, and interoperability. To begin to articulate the nature of these outcomes and how they can be achieved, the IWG has identified seven core challenges — outlined in Section 2, below.

While the group's primary goal is to address these core challenges, this is only a means to an end. Data and information management is becoming increasingly fragmented, limiting possible productivity gains within the sector and CSOs' capacity to focus systematically on consumer and community engagement activities. For example, scrutiny of current ICT infrastructure in the sector reveals that in many of the larger CSOs there is considerable duplication of investment in data and information management systems — an inefficient use of scarce resources; while in the smaller CSOs there is considerable *under* investment in support systems infrastructure. Conversely, in government agencies there appears to be significant *over* investment in and duplication of data warehousing facilities. The overall impact is to impair the ability of CSOs to both invest in systems that could deliver increased productive capacity, and develop and implement evidence-informed decision-making cultures within their own organisations. Together with the burdensome duplication of work engendered by the need for CSOs to interact with multiple data systems and frameworks, the end result is a disproportional allocation of scarce resources to support systems infrastructure that is nevertheless delivering limited value to the organisation, the funder, and the delivery of services. Surely the principles of social justice, transparency and accountability demand more effective allocation and use of resources and human capital.

The remainder of this paper is divided into three sections: a summary of the seven core challenges identified by the IWG; a discussion of some broader contextual considerations; and some concluding comments on the way forward.

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<sup>1</sup> The IWG was formed to clarify the specific issues around data and information systems and work with government and the sector to implement appropriate reforms. Current membership of the IWG is Richard Vines (Childrens' Protection Society), Pere Ruka (MacKillop Family Services), Rendle Williams (Salvation Army), Elaine Cope (ICT Matters), Greg Brady (Connections), and Dean Lombard (VCOSS). The IWG's purpose and scope is defined in its Terms of Reference ([www.doingitbetter.net.au/docs/iwg-tor.doc](http://www.doingitbetter.net.au/docs/iwg-tor.doc)).

## 2. Seven core challenges

### Challenge 1

#### **The fragmenting impact of multiple client data collection systems**

A typical Victorian CSO might be engaged in a number of different service system contracts with different funding stakeholders — sometimes including both State and Commonwealth Governments. Each funding body specifies what output data must be reported from the delivery of services. So each CSO needs to log performance-related data into several different data management systems (see Appendix 1). For example, a Victorian SAAP (the Commonwealth's Supported Accommodation Assistance Program)-funded crisis service that is operating as 'front door' for homeless clients is required to record the contacts for three stakeholders — itself (for activity recording), the SAAP/Victorian Homelessness Data collection, and the DHS (Victorian Department of Human Services) regional referral system (to allow service coordination with other crisis accommodation services). This requires the CSO to enter the data into three systems: SMART (SAAP Management and Reporting Tool), CHART (DHS's Client Housing and Referral Tool), and its own system. There are no protocols to allow both the logging and sharing of data via a single system — if there were, the worker could enter the required client and assessment data once and satisfy all three stakeholders.

As a further illustration, *CSO 1* in Figure 1 (below) is part of five different service systems, each contributing a percentage of overall turnover. Consequently, it needs to report via five different information management systems, as well as maintaining its own activity records. This is not only an administrative inefficiency; the resultant de-integration of performance data actually undermines the capacity of the CSO to create its own approach to data management and evidence-informed decision-making.

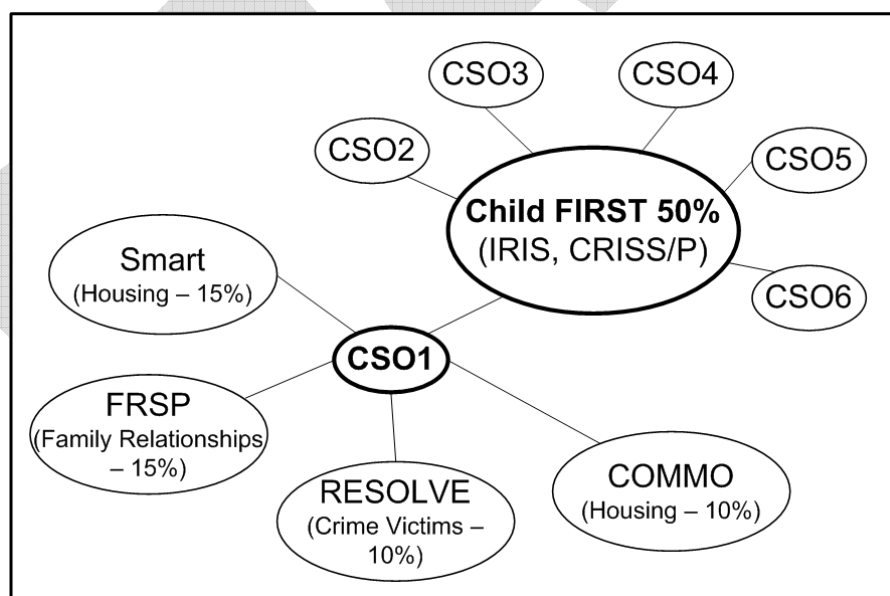


Figure 1: Multiple data system for different government programs  
(hypothetical case only)

**CHALLENGE 2*****The fragmenting impact of multiple quality assurance frameworks***

The challenges of collating quality compliance datasets are equally as formidable as those for performance monitoring datasets. Quality assurance frameworks are established through the overall policy environment and program management objectives for each funding body — as outlined in Figure 2 below. It goes without saying that these policy objectives can change quite regularly with changing government priorities, turnover of ministers or senior bureaucrats, and change of government. For their part, funded agencies are required to manage the evidence of compliance with each funded program. This is achieved through different quality assurance frameworks and independent audit functions (see Appendix 2). Each different quality assurance system represents a discrete information schema in its own right, and it is proving onerous for CSOs to link the evidence of day to day human service activities involved in service delivery and contract management with the different elements that make up each quality assurance information schema. This excessive demand on resources in turn reduces the capacity of CSOs to deliver core services and address other urgent challenges.

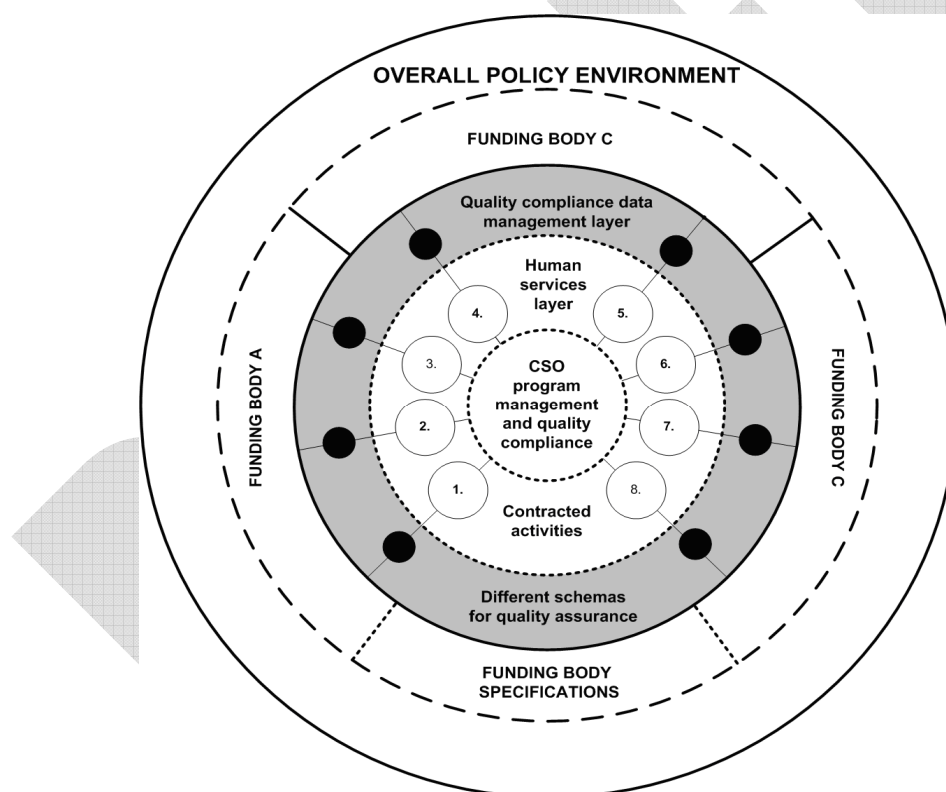


Figure 2: The Layers associated with quality assurance information management

**CHALLENGE 3*****The lack of protocols and systems to support e-referrals***

Considerable anecdotal evidence suggests that responding to new legislation demands more sophisticated data and information management from CSOs. To take the Child and Family Services Sector as an example, the new *Best Interests Principles* within the *Children, Youth and Families Act, 2005* have significantly increased the need for cross-sector referrals as vulnerable children, young people and families require services drawn from a number of different service systems (examples of which are provided in

Figure 3, below). As the complexity of cases increases, so does the need for information sharing and exchange of client data. Systems have to be developed — and made available to CSOs — that can share this information while remaining consistent with privacy legislation.

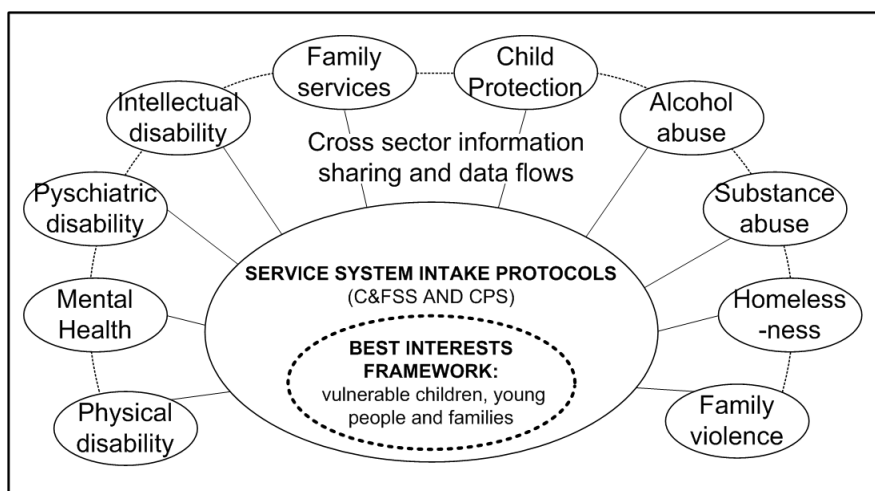


Figure 3: The Best Interests Framework and the need for cross service system referrals, information sharing and data flow.

**CHALLENGE 4**

***The absence of a shared vision with respect to interoperability***

Beyond the challenge of complying with privacy legislation, a significant technical constraint associated with the cross-sector data sharing is that different professional groups describe the elements of their schemas (and standards) in different ways. For example, in Figure 4 (below), schemas, A, B and C refer to Family Services, Mental Health and Housing data respectively. For a Family Services provider to collect and collate data in one digital content storage system for one particular set of purposes and then transfer this content to another storage system for another set of purposes would require an interoperability framework that does not currently exist<sup>2</sup>.

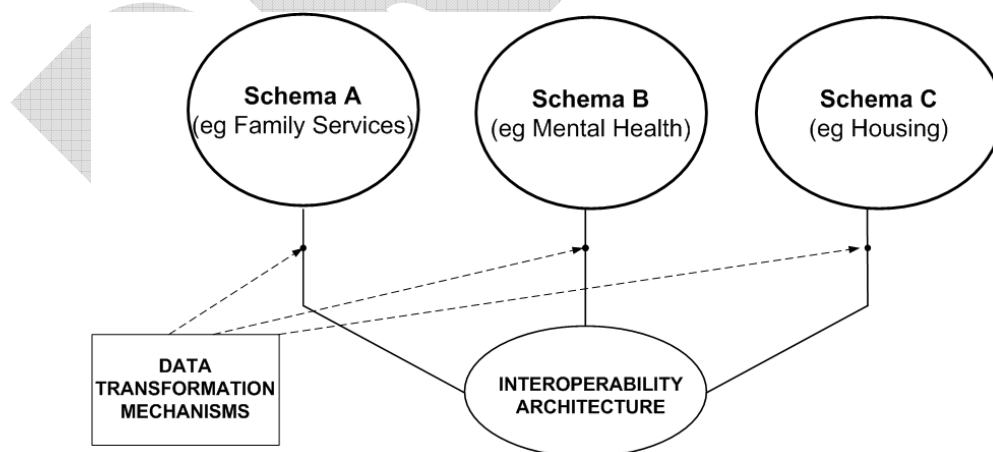


Figure 4: The concept of interoperability architecture

The Australian Government (Department of Finance and Deregulation) defines interoperability as “the ability to transfer and use information in a uniform and efficient

<sup>2</sup> There can be several different ways of thinking about and addressing the technical challenge of establishing an interoperability framework. However, in describing interoperability in this simple way, acknowledgement is given to the influence of Cope and Kalantzis (2004, p 260).

manner across multiple organizations and information technology systems". An interoperability framework or architecture, developed through collaborative research and community debate, is desperately needed to lighten the data management burden on CSOs by enabling the semi-automated and seamless transformation of content from one form of representation to another. Whilst serious effort is being made to develop an Australian Government interoperability framework (ibid), it remains unclear as yet how relevant this framework will be for data sharing and capture across the complex open networks that make up much of the community services sector. Careful consideration is required to determine the most appropriate technical framework (Copyright Agency Ltd, 2003, p 28).

### **CHALLENGE 5**

#### ***The lack of agreed protocols to publish sector and program-specific standards***

CSO data and information management challenges are further complicated by the absence of agreements across different program domains about the need for formal publication of different schemas as standards. At the present time, these schemas are becoming manifest through the publishing of different data dictionaries, such as the IRIS data dictionary in Family Services (Department of Human Services, 2007a). However, the practical difficulties still faced by ICT managers within CSOs highlight the need for a more comprehensive approach. Guidelines are required to ensure consistency and appropriate coverage when publishing sector standards, including quality assurance standards.

Such publishing standards should include:

- Descriptions of the type of social system collaborations required to reach negotiated agreements about publishing a schema as a common standard for any particular domain.
- Mechanisms for publishing all elements of each standard, so there are common approaches and equal access to these standards across multiple jurisdictions, including state and commonwealth governments and even internationally.
- The governance arrangements that are needed for developing, publishing and enacting change to these standards. Such governance arrangements need to outline change management protocols so that individual CSOs can plan changes to their own internal schemas in harmony with changes in external standards.
- The need for published standards to remain available on a persistent basis, so that stakeholder groups can retain access to outmoded standards over time. This continued access to standard frameworks on a persistent basis will become increasingly important for content sustainability and historical accountability.

The development of information and data management systems based on the agreements and publishing of different sector standards is a challenge confronting many different sectors at the present time – not just the community services sector (Vines, 2006, p 42).

### **CHALLENGE 6**

#### ***The absence of content sustainability strategies***

Community sector archivists have for some time been concerned about the shift towards electronic records management (University of Melbourne, 2007). Contemporary content management information warehousing systems provide access to content in current formats; but changing technology platforms that make these formats obsolete could compromise future access. Systematic agreement on content sustainability strategies is

desperately needed to secure continued access to information into the future. Such strategies have to be inclusive of different data formats, including rendering to both print and screen based outputs.

### **CHALLENGE 7**

#### ***The lack of effective governance and partnership arrangements***

To develop more effective data and information management within the Victorian community sector, better governance arrangements must be established between all stakeholders, including government. Appropriate governance arrangements would do much to address the challenges outlined in this discussion paper, and would take into account complex issues to do with:

- Implementing effective information and data sharing systems while upholding both the requirements and spirit of privacy legislation across multiple levels of government;
- Establishing partnership arrangements for monitoring emergent patterns in systems, drawing upon collected data and information; and
- Deepening the governance arrangements for establishing joint problem solving mechanisms using the data and information collected across the community sector.

## **3. Broader considerations**

Any public debate about challenges associated with interoperability must be positioned within as broad a context as possible. The focus is not, and should not be about achieving efficiency and effectiveness of cross-sector data and information sharing systems per se. Rather, the rationale for interoperability is to permit greater service system integration and reduce the compliance burden in order to facilitate higher quality delivery of community services that are more responsive to existing and emerging community needs.

Within this context, there are three overarching considerations that should be taken into account in moving towards service system integration and interoperability. These are discussed in turn as follows.

### ***Interoperability and whole system impact analysis***

To fully realise the potential of interoperability, a new type of program governance framework is required. The IWG has adopted the phrase “whole system impact analysis” to articulate this framework (Cognitive Edge, 2007).

A whole system perspective is increasingly necessary for monitoring service delivery. This is because the effectiveness of any single program intervention is more often than not conditional upon the impacts of other factors and program interventions. For example, successful outcomes for a client engaging with a Family Services program may partly depend upon the engagement of other family members with homelessness, mental health, family violence, or other service systems. Consequently, any program-specific evaluation cannot be successfully undertaken if there are not mechanisms in place to monitor the impact of interventions on a whole system and sub-system basis. This is a critical consideration when pursuing the interoperability objective of seamlessly sharing information between programs.

To enable this kind of whole-system impact analysis to be undertaken, much deeper levels of partnership engagement than is currently the case will be required between the CSO sector and funding agencies. The principles of complexity science, which underpin

these views about “whole system impact analysis”, must be better embedded within public policy development and implementation frameworks, including of the structure of the partnership relationship between key stakeholders.

### ***Interoperability and knowledge management***

Any shift towards interoperability should be accompanied by reformed mechanisms for collecting, collating, sharing, interpreting and critiquing data and information. These collaborative and social processes are the essence of what an emergent approach to knowledge management within the CSO sector should encompass. Part of the challenge involves the need to better equip sector representatives, funding body representatives and technical personnel to engage in shared and meaningful dialogue about the complex technical challenges associated with interoperability and how data and information could be better used by practitioners in their day to day work.

By explicitly encompassing the design of the support systems (Vines and Naismith, 2003) required to generate, critique and integrate new knowledge, knowledge management differs fundamentally from the more familiar discipline of data and information management (Firestone and McElroy, 2003). This highlights an important principle — that interoperability is not simply a tool for automating data and information exchange. More importantly, it provides a mechanism for sophisticated approaches to making sense of emergent system patterns across multiple service systems.

The development of understandings of service needs and patterns of need is conditional upon the quality and design of the social system networks that underpin effective data and information management. These social system networks are relevant to the individual CSO, catchment, regional and state-wide levels of service system monitoring and engagement. In turn, an effective response to emergent service system patterns requires the negotiation of new partnership and governance principles between the sector and funding bodies, such as state and commonwealth governments. New models for such partnership and governance frameworks are already emerging in some sub-sector coalitions and networks, such as the Child and Family Services Alliances that are flourishing as part of the Family Services Strategic Framework (Department of Human Services, 2007b). These are being strengthened by new innovations to support effective decision making of practitioners and practice teams such as the Best Interests case practice model (Department of Human Services, 2008).

### ***Integrated approaches to interoperability***

The IWG aims to position the CSO sector within the wider context of national and international approaches to interoperability initiatives (see for example, the Department of Education, Science and Training, 2007a). This is important because failure to participate in the development of new data and information management infrastructure will leave the sector marooned for years to come. Especially critical is the need to systematically address the seven core challenges outlined in this discussion paper in that wider developmental process.

In working towards an integrated approach, the IWG is aware of emergent approaches to interoperability as part of the vision of the “semantic web” and the use of semantic web technologies (see for example, Hyvönen, E. *et al.*, 2007). To this extent, the IWG will take into account, and be influenced by, initiatives developed by State Governments, the Commonwealth Government and even overseas governments. If resources permit, a focus will be placed upon identifying opportunities to connect community sector representatives with people and processes engaged with other reform initiatives such as e-health, e-education and the like.

## 4. Conclusions

With the CSO sector becoming increasingly bogged down in inefficient work practices associated with the incremental and creeping effects of, for example, multiple client information management systems and quality assurance frameworks, the time is right for hearty debate, strategic thinking and collaborative work on interoperability and related issues. If the sector is to overcome the impacts of these serious efficiency and cost imposts, a new vision for data and information management is required; and interoperability must be at the heart of this vision.

Along with the seven core challenges that must be systematically addressed, this paper has also begun to outline a vision for interoperability that is premised on *knowledge* — rather than information or data — management.

A serious and integrated response to the issues discussed above is required if a vision for interoperability is to be realised. Such a response will require dedicated work to harmonise existing and future interoperability strategies with statewide, national and international initiatives. With appropriate resourcing, along with intelligent network strategies with key stakeholder groups within and across different sectors, this can be achieved in a foreseeable timeframe. The ultimate purpose of the Doing IT Better Interoperability Working Group is to catalyse this achievement.

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## APPENDIX 1

### List of client data collection systems used by Victorian CSOs

An exhaustive list of the different client information management systems for Commonwealth and State-funded programs (designated “C” and “V” respectively) is difficult to compile, but would include:

- **ADIS** (Alcohol & Drug Information System) — used by Alcohol & Other Drug Treatment services (V)
- **CHART** (Client Housing and Referral Tool) — used by Housing Information and Referral services for crisis accommodation referrals (V)
- **CMS** (Client Management System) — used by Housing Information and Referral services for client data and activity logging (V)
- **CODA** (Community Housing Operations Data Administration) — used by Rooming Houses or Long Term Community Housing services (V)
- **CRISSP** (Client Relationship Information System for Service Providers) — used by services receiving funding from the department for Placement and Support Services, Disability Services, Youth Justice, and Early Childhood Intervention Services (V)
- **IRIS** (Integrated Reports & Information System) — used by Family Services to record all hours of service provided to clients (V)
- **PAMS** (Property Administration & Management System) used by Transitional Housing Management services (V)
- **QDC** (Quarterly Data Collection): used by Psychiatric Disability Rehabilitation Services
- **resolve** — used by services assisting victims of crime including VACP (Victims Assistance & Counselling Program) services and domestic violence services (V)
- **FRSP Online** (Family Relationship Services Program)— used by family support and counselling services funded by FRSP (C)
- **SMART** (SAAP Management and Reporting Tool) — used by SAAP (Supported Accommodation Assistance Program) homelessness services (C)

## APPENDIX 2

### List of quality assurance frameworks used by Victorian CSOs

An exhaustive list of the different quality and quality assurance standards and frameworks for Commonwealth and State-funded programs is difficult to compile, but includes:

- Family Services
- Out of Home Care Services
- Home and Community Care (HACC) standards
- Homelessness Assistance Service
- Performance Standards for Registered Housing Agencies
- Quality Improvement and Community Services Accreditation (QICSA)
- Australian Business Excellence Framework (ABEF)
- ISO 9001 Management Responsibilities
- Australian Council on Healthcare Standards (Equip)
- Family Relationship Service program (FRSP)
- Alcohol, Tobacco, and Other Drugs Services (ATODS)
- The Health and Community Services
- Alcohol, Tobacco, and Other Drugs Services (ATODS)
- Community and Primary Health Care (PHC)
- Home Based Care (HBC) Services
- Integrated Health Services (IHS) Mental Health Services (MHS)
- Quality Assurance in Family Day Care,
- Quality Assurance in Long Day Care,
- Quality Assurance in Outside School Hours Care

*Sources: Department of Human Services 2007c; Quality Improvement Council; National Child Care Accreditation Council; Australian HealthCare Associates, 2008*

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