

Transport Research Arena– Europe 2012

Recent developments in community transport provision: Comparative experience from Britain and Australia

Corinne Mulley^a, John D Nelson^{b,*}

^a*Chair in Public Transport, Institute for Transport and Logistics Studies, University of Sydney, Australia*

^b*Chair in Transport Studies, Centre for Transport Research, University of Aberdeen, UK*

Abstract

Community transport (CT) services play a unique role in filling the accessibility gap which conventional public transport cannot fill as a result of funding, accessibility or spatial constraints. In England alone there are approximately 1,700 community transport organisations, with over 60,000 volunteers and 10,000 employees. Over 15-million trips were provided by community transport (CT) groups in 2010 and many of these services were tailored to the needs of groups and individuals, providing both efficient and effective community based transport. In Australia, Community Transport is organised on a State basis, with different models of operation, and so it is difficult to estimate the national impact in terms of numbers. However, in contrast to British and American models, Community Transport in Australia is more targeted at the disabled and frail members of society as funding limits the ability of community transport groups to meet the spatial gaps inherent in the lower density land use of Australia. This paper will highlight, with illustrated examples, the benefits of community transport and illustrate recent developments within the sector in both Britain and Australia. In the case of Britain the move towards partnership-working with local authority is the hallmark of current Government policy. Wide scale adoption of ICT is also enabling CT operators to diversify their activities and this is illustrated by a case-study from Glasgow. In Australia, the sector is at an important milestone: the Federal Government is about to change the rules of the funding process and it is anticipated that Australian community transport groups will be looking world-wide for inspiration as to how to confront this step change.

© 2012 Published by Elsevier Ltd. Selection and/or peer review under responsibility of the Programme Committee of the Transport Research Arena 2012. Open access under [CC BY-NC-ND license](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: community transport; ICT;

* Corresponding author. Tel.: +44-1224-272354; fax: +44-1224-272331.
E-mail address: j.d.nelson@abdn.ac.uk.

1. Introduction

This paper highlights, with examples, the benefits of community transport and illustrates recent developments within the sector in both Britain and Australia. The structure is first to define Community Transport (CT) before considering the role that CT plays in reducing the accessibility gap. The following section looks at the institutional arrangements under which CT operates in Britain and in Australia. Alternative service models and the enabling role of ICT is considered before turning in more detail to the role of ICT in the provision of flexibly operated transport services. CT operators use flexibly operated transport services as their main role of delivery and a case-study which integrates conventional and CT operators is presented to highlight significant issues that could both influence the future of CT. This is followed by a discussion which highlights the different experiences in Britain and Australian CT industries and the likely future challenges to be faced on each side of the globe.

2. Defining Community Transport

The UK Community Transport Association define Community Transport (CT) as: “local passenger transport provision which is not provided through scheduled bus or rail services and which is organised on a non-profit basis by voluntary organisations, community transport groups, and other non-statutory bodies” (Milne, 2011).

A brief description of the scope and definition of Community Transport (CT) as understood in the British context is offered by DfT (2011). CT ranges from school and patient transport; community buses for social groups or clubs and dedicated transport schemes for rural and isolated communities. CT organisations are usually independent charitable companies limited by guarantee. As discussed below British CT operators may apply for a permit to operate a vehicle for the carriage of passengers for hire or reward. In England alone there are approximately 1,700 community transport organisations, with over 60,000 volunteers and 10,000 employees. Over 15-million trips were provided by CT groups in 2010 and many of these services were tailored to the needs of groups and individuals.

CT in Australia would fit easily into the definition provided by the UK Community Transport Association. However, in contrast to English and American models (where arguably, Community Transport development has been enhanced by the Disability Discrimination legislation), Community Transport in Australia is more targeted at the disabled and frail members of society as funding limits the ability of community transport groups to meet the spatial gaps inherent in the lower density land use of Australia. Community Transport is organised on a State by State basis although a new national co-ordinating body, the Australian Community Transport Association (ACTA) was formed in 2011. Funding comes primarily from Commonwealth (Federal) sources through the funding of Home and Community Care (HACC). Whilst this is national funding, its implementation varies by State for CT operators and there is currently considerable uncertainty about how the programme will work in the future as it is under review by the Commonwealth.

CT provides much valued essential services, often for the most vulnerable in society and are thus frequently associated with niche markets such as shopper services or health or social work related activities. CT can provide efficient and effective tailored transport solutions of both a general and specialised nature, a point which also allows CT to promote equality of opportunity through transport, thus contributing to the alleviation of “transport poverty”.

In a UK and European context CT operators have been closely associated with the development of (telematics-based) flexible and demand responsive transport services (Mulley and Nelson, 2009) but this is not the case in Australia.

3. The Accessibility Gap

Accessibility is defined as the ease by which destinations can be reached by passengers. This is predicated on transport being an enabler to access destinations where activities such as work, education, shopping, health appointments or social and recreation take place. Public transport has a wider role than simply providing accessibility to destinations and this includes the inherent health and environmental benefits of public, as opposed to private, transport as well as providing inclusion in society and life opportunities.

Accessibility is multi-dimensional and gaps can exist in each of the dimensions in public transport provision (Currie 2010, Social Exclusion Unit 2003). Nevertheless, it is usually only the spatial and physical accessibility gaps which are highlighted. If public transport does not go to a passenger's destination or if the access to public transport requires many steps or steep gradients, then this provides a spatial gap. Physical accessibility often provides issues for passengers if, for example, vehicles are not wheelchair accessible or if signage does not provide for the visually impaired.

Accessibility gaps can also exist through the timings of public transport if the service is infrequent or is not timetabled at the time the passenger needs or wishes to travel. In many less dense areas, both in the UK and Europe, public transport is often circuitous because it attempts to provide spatial coverage: this can provide very lengthy journeys in comparison to a similar journey by private car. Financial gaps in accessibility occur when the passenger cannot afford to take the journey by public transport. Lack of suitable information can provide a knowledge gap for passengers. Finally, cultural and behavioural issues, for example if a passenger is fearful of travelling after dark, can create gaps in accessibility.

In both Britain and Australia, CT closes the accessibility gap where CT services are provided. The provision of door-to-door transport with personal assistance closes the spatial and physical accessibility gaps.

Constrained by its funding, CT in Australia provides a low volume service which is restricted to older people and frail members of the community. For these members of the community, many of the accessibility gaps defined above are removed. But time and financial gaps may remain. CT clients may need to 'fit in' for when service is provided rather than have accessibility at a time of their choice. Moreover, whilst the funding rules preclude the charging of fares, CT groups could not provide as many trips as they do if they did not ask for donations. Many Australian CT groups do ask for significant sums as donations, significant because of the nature of the long journeys (where 1000km round trip is not untypical) but social pressure of making a donation could lead to financial hardship for the passenger.

In contrast, the accessibility gap met by British CT groups is arguably greater since the funding, whilst constrained, is not as restrictive. British CT groups also operate under more favourable institutional arrangements which provide opportunities to charge fares to their clients and the general public which can cross subsidise trips which are more expensive to provide. This is discussed further in the next section.

4. Legislative Framework for Community Transport

The legislation governing the operation of community transport in Britain is summarized in DfT (2011). Operators providing non-profit making services can apply for a permit, issued under Section 19 or 22 of the Transport Act (1985), which allows them, subject to certain conditions, to operate PSVs without the need for a PSV operator's licence. Section 19 and 22 permits are issued by VOSA on behalf of the Traffic Commissioners. Section 19 permits for vehicles adapted to carry no more than 16 passengers can also be issued by 'designated bodies'. These are listed in secondary legislation and include local authorities along with individual not-for-profit organisations such as the Scouts Association and Age Concern.

Section 19 permits allow organisations to operate vehicles to transport their own members or people whom the organisation exists to help. They cannot be used to carry the general public, but can serve isolated and rural communities. Cooper et al. (2010) describe how group bus services may be provided under Section 19. The general public is not permitted to use these services that should be provided by a non-profit making body concerned with activities for the benefit of the community (DfT, 2002). Services are usually provided for a particular social or community group, such as older or disabled people and would normally be for between 9 and 16 passengers. A typical example would be the Dial-a-Ride services found in many towns and cities. In Britain, a permit must be obtained from a Traffic Commissioner or in some cases from a local authority and there is no need for an operator's licence or to register a route. The benefits of group bus services may be summarised as being to enable a voluntary group to run a bus service for a particular social group without meeting the costs and other requirements of operator licensing; and that the service provided can be flexible as there is no requirement to register a route.

Section 22 permits allow organisations, concerned for the social and welfare needs of one or more communities, to operate a community bus service - this can be for the general public and include registered and flexibly-registered services. Community bus services are local bus services run by non-profit making organisations concerned with the social and welfare needs of a particular community or group of communities, either complementing existing bus services or providing one where there is no service. Community buses are permitted to carry the general public (DfT, 2002). These services may be run with vehicles of between 9 and 16 passenger seats, on a voluntary non-profit basis, and using unpaid volunteer drivers. Though no payment may be received for driving, reasonable expenses and payments for loss of earnings from driving in exceptional circumstances may be made. Crucially, a permit is needed from the local Traffic Commissioner and the services must be registered as a local bus service. Although an operator's licence is not required, the Traffic Commissioner will want to be assured that proper arrangements have been made for maintaining the bus. The benefits of a community bus service are identified by DfT (2002) as enabling a voluntary group to run a scheduled bus service without meeting the costs and other requirements of operator licensing; providing services tailored to fit local needs (whilst also carrying the general public) and filling a gap which is not attractive to a commercial bus operator. As with Taxibuses the vehicle can be used for other purposes when not required for a local bus service (Cooper et al., 2010).

In Australia, CT operators are generally not viewed as transport operators, in terms of the requirement to meet the same standard of regulatory control as in the UK. The actual level of compliance depends on the State of operation. In Queensland, for example, there is exemption from Operator licensing for small groups operating a limited number of smaller vehicles. In New South Wales (NSW), CT currently operates outside the Passenger Transport Act of 1990 and no operator accreditation is required.

5. Alternative service models and the enabling role of ICT

Milne (2011) emphasises that CT operators are more than just transport providers; they connect communities in more ways than might be imagined, identify issues related to lack of access, and have in depth involvement in community development, inclusion, independent living, etc. of which all have a transport implication. For example, across Britain, 16% of people aged 70 and over report difficulty with travel to a doctor or hospital. The number of older people in Scotland is projected to rise by 12% per cent between 2010 and 2015 (to around 991,000 in 2015), with an 18% increase in the number of people aged 85 and over (Audit Scotland, 2011). Such demographic changes are a major challenge for CT operators who deal with the most vulnerable in society; clients with dementia, special needs, disabilities etc.

On a daily basis CT operators are faced with a lack of resources. In addition, because access to CT services is often restricted by the characteristics of the user, there is often unmet need from clients who do

not meet the required conditions. The degree of unmet need is a concern for funders although difficult to measure unless CT operators record unmet requests (which is now starting to be done in NSW, Australia). Short-term funding, legislation, lack of perception and acknowledgement from statutory organisations and Government all affects their ability to support desired levels of services. Running CT services is time and labour intensive and many groups have only a small paid workforce and often an over-reliance on key individuals. The proportion of paid to unpaid volunteers varies significantly between operators both spatially (with less urban groups often having higher proportions of volunteers), for historical reasons, depending on the evolution of the organisation, and the degree to which recruiting and retaining committed staff and volunteers is difficult.

CT operators both in Europe and Australia primarily operate flexibly operated transport services defined as services provided for passengers that are flexible in one or more dimensions of delivery such as route, timetable or vehicle. A number of technologies have converged to encourage the wider uptake of flexibly operated transport services (Fu, 2002). These include:

- Digital map data, visual and vector (for route calculation);
- Route optimisation software systems;
- Real-time communications, for communications with drivers and passengers; and
- Real-time positioning, for location of vehicles, users and potential users.

This paper describes these technologies before turning to a case-study which highlights potential implementation issues and a discussion on the extent to which these technologies are used to facilitate the development of CT provision.

The remainder of this paper explores what form partnership working between local authority, community and voluntary sectors might take and considers the role of ICT in facilitating this.

6. The role of ICT in facilitating flexibly operated transport systems

Cooper et al. (2012) note that in broad terms recent developments can be split between the emergence of planning systems, suitable for operators and authorities; and information systems used by intending passengers in planning transport. Communications technologies have also impacted the systems in place, most particularly in terms of the ability of a vehicle to communicate with land-based systems, but also in terms of the methods by which users' access information about services. Technologies used in booking (e.g. SMS, internet) have allowed for the more careful planning of transport, though the extent of information available in the past has not always reflected the actual numbers of services available.

The main architectural components of any technology-based flexible transport service (FTS) are the control centre (also known as the travel dispatch centre), customer devices, in vehicle on-board unit and equipment and communication devices.

The main functionalities of FTS are handled by the Travel Dispatch Centre (TDC). A TDC acts as a mediator between customers (passengers) and operators; and deals with a wide range of activities such as trip reservation, travel planning (i.e., optimal route search, vehicle assignment, travel time and delay estimates etc.) and vehicle dispatch and control.

Integration of various technologies is used to carry out the above activities (Fu, 2002; Palmer et al., 2004). These technologies are:

- Information and communication technologies (ICT): Internet, personal digital assistance devices (e.g., mobile phones) and automated voice responders are used to provide communication between customers (passengers) and a TDC. Digital radio, GSM, GPRS and wireless personal communication systems are often used to provide communication between vehicles and the TDC.
- Automatic vehicle positioning system: This includes a vehicle tracking system (e.g., GPS, dead-reckoning, RFID control system and CCTV monitoring) and a GPRS to transfer real-time vehicle location information to a control centre.

- Automated fare payment system: smart-card based fare collection system.
- Transit information: A computer-based system for disseminating real-time transit information (such as anticipated delay, arrival time schedules, etc.).
- Computer-aided dispatching system: A computer based software package to perform reservations, scheduling, routing, dispatching and reporting.

A range of GIS and digital map-based routing software is used to design, operate and manage flexible transport services. A sample list of this software is illustrated in Table 1.

Table 1. Examples of software for FTS

Software	Features/comments/notes	Web link
<i>MobiRouter</i>	Real-time system Automatic customer order entry and journey combination Optimal planning, routing and scheduling Can integrate fixed route buses and freely routed taxi-type transport Links to other systems: Internet booking, GPS positioning, vehicle database, etc. Raise alarms for potential delays Accommodates groups and group journeys New generation wireless data transfer	http://www.mobisoft.fi/www_english/mobirouter.php
Trapeze dispatch software	Fully automatic planning, routing and scheduling system Uses shortest path algorithms Automatic planning and optimisation of multi-modal transport Tools for tracking and registering events (e.g., last minute cancellations). Automatic generation of timetables and scenarios Real-time system	http://europe.trapezegrup.com/solutions/sol_dr_planningdispatch.php
Diplomat	Real-time mapping and routing software	http://www.diplomat.co.uk/
Logical Transport	Useful for vehicle and passenger scheduling, routing, vehicle tracking Allows multiple transport services to collaborate and schedule together Integrated scheduling for flexible and semi-flexible routes Real-time tracking over GPRS and on-board computer	http://www.logicaltransport.com/index.html
Cleric's APTS	Most powerful special needs passenger transport system (e.g., Ambulance services and control) Automatic journey planning, scheduling and routing Allows only internet booking, enquiries and reporting (no phones)	http://www.cleric.co.uk/oursystem.html
REACT: Dynamic Vehicle Scheduling & Real-time Tracking	Dynamic routing and scheduling of vehicles for multiple drops or multiple collects Dynamic assignment. Real-time planning and distribution scheduling in response to last minute orders, cancellations, redirections, etc. Efficient fleet and driver usage, taking account of working time directives, shift scheduling, vehicle maintenance scheduling and customer constraints. Real-time optimisation based on operational constraints and business objectives Considers potential delays due to traffic congestion, etc.	http://www.mjc2.com/Frameset_products_realtime.htm
<i>RouteOptimizer</i>	<i>RouteOptimizer</i> provides the optimal solution of each vehicle route based on several factors like requested stops, available vehicles, quickest route, average speed of vehicle, vehicle capacity, etc. Web-based system - no need to install any software.	http://www.adoc.com/RouteOptimizer.aspx
<i>Personalbus</i>	Software for planning, dispatch and administration of DRT Service network model and DRT fleet definition can be modified at any time Applied in single user or multi-user mode TDC implemented on single PC or on a multi-server distributed architecture	http://www.softeco.it/softeco/en/pbus.html

Source: Based on Velaga (2011)

Many of the dynamic vehicle scheduling and real time tracking systems identified in the table are expensive both to implement (in capital and on-going cost terms) and are potentially difficult to use in an environment where volunteers may undertake some part of these tasks. Scale is also an issue: many CT groups are too small both in Britain and Australia to take advantage of the benefits offered by such

investment. In Britain, CT groups are diverse in their organisational form as well as size with some groups now firmly in the Social Enterprise model (e.g. Buchan Dial-a-Community Bus) whilst others operate over small geographical areas (e.g. ADAPT in Northumberland). The diversity is also evident in Australia where differences between urban and country CT groups are marked and differences between States reflect differences in funding and regulation. For example, in Victoria, Australia, CT is often part of a wider social care provision whereas in NSW, CT groups are more fragmented and in general concentrate only on the transport element of the community care package.

Although some CT groups in Britain operate scheduled services under the legislation for bus operation, these services and the inter-relation with their flexibly operated services are not the centre of attention. As identified above, British and mainland European providers of flexibly operated transport services have been closely linked with the take-up of ICT although this has not spread from the conventionally defined public transport mix to the CT sector, despite the latter being longer standing operators of flexible operated transport services.

In discussion with CT operators (as part of the EC FLIPPER project (<http://www.interreg4cflipper.eu/>)) about the benefits of Booking and Dispatching Technologies (BDT), it is clear that benefits were understood. CT operators would benefit from the way in which route information can be sent in ‘real-time’; constantly updating / informing the driver of passenger details, addresses, cancellations, extra passengers booking after service has received the schedule. This would also lead to less time spent making calls to drivers. This could be particularly helpful as older people and the more frail members of the community often have legitimate reasons to cancel their bookings at the last minute.

The fact that information can be sent as ‘data’ at a very low cost, the presence of digitised maps which allows the co-ordination of a large area without detailed local knowledge, and the ability to manage complex bookings make the BDT systems potentially very flexible and efficient. Moreover, the systems can provide a step change in creating the ability to take live bookings (once journey has commenced and after driver has received schedule) and minimising the dispatcher error as all information is available through the system and does not need to be communicated by another source.

For some time the British Government has encouraged local authorities and other CT support organisations towards the greater use of social enterprise approaches within the sector. It should be emphasised though that although the use of social enterprise approaches can be a way of increasing income streams for the benefit of both operators and customers, it is not normally a way of eliminating the on-going need for external support, be that from funders or volunteers. Nor has it provided the opportunity for the CT sector to invest widely in the ICT technology that could potentially provide services more flexibly with less on-going resources.

However, the current economic climate in Britain has brought both challenge and opportunity to the sector as a whole with new and potentially exciting partnership opportunities developing between the statutory and voluntary sectors. The next section presents a case-study of such a development.

7. Case-Study of Glasgow, UK

Strathclyde Passenger Transport (SPT) has been operating Dial a Bus services in the Strathclyde area for 21 years. A Travel Dispatch Centre (TDC) is located at their Headquarters in Glasgow. In 2003, the Trapeze real-time booking and dispatching system was introduced and the number of TDC staff has grown to 18 in total including supervisors, booking and dispatchers. The number of phone calls per week taken at the TDC is 4,500. Bookings can be made Monday to Friday between 0845 and 1630 hours. On-vehicle technologies are currently being evaluated to assess the potential of introducing on day, real-time scheduling in the region and on-line booking is planned. Currently users must book up to 24 hours in advance.

Investment in the Trapeze system has allowed the TDC to evolve and it now co-ordinates travel for elderly, disabled and rural residents with 16 operators (including several CT) in the area to provide integrated service solutions

The success of SPT in introducing its real-time scheduling and dispatching approach was assisted by the development of a Cost and Price model as part of their involvement in an EC project, ICMA (Masson, 2011). SPT had worked closely with the developer in the design of the model and as part of the process a feasibility study was carried out in 2010. This allowed SPT to gauge the feasibility of integrating evening and weekend services utilizing CT organizations instead of paying overtime to council workers utilizing Glasgow City Council vehicles.

Use of CT providers has provided significant benefits to the community at large as well as to CT operators. SPT has shown that real-time scheduling and dispatching services can significantly maximize the use of resources already used by elderly and disabled groups in the area to aid long-term sustainability of services. Since services were introduced in April 2010 results have been encouraging. The cost per single passenger trip ranges from £1.36 to £9.16 (10% of all passengers carried are wheelchair users).

Confidence in SPT and the wider use of their systems used at their TDC has resulted in further joint working with Glasgow City Council. From spring 2011 SPT are co-ordinating the Council's Social Services Transport Services. This will involve over 200 vehicles. The initial saving from the earlier project were in excess of 30% and it is estimated that further significant savings will be achieved in this latest venture.

SPT is currently carrying out a number of feasibility studies for councils in the Glasgow area. The work is based on maximizing the use of resources to meet the demands of Social Work, Education, Special Needs and Health transport requirements. SPT hopes to increase the scope for using their Trapeze system to book and schedule trips across all sectors. The initial pilot projects have indicated possible financial savings of around 30% compared to the previous "silo" systems where each sector control their own transport requirements and budgets. Experience from previous EU funded flexible transport projects (e.g. SAMPO, FAMS, MASCARA, SUNRISE; see: Mageean and Nelson, 2003; Nelson et al, 2010) has confirmed that utilizing a "virtual agency" approach with real-time booking and scheduling systems can result in financial and resource savings in excess of 20%. The added value to the concept is that the needs of customers are recognized in the design of services.

Notwithstanding the successful results gained using an ICT solution there are still significant problems to be addressed in achieving a further roll out of the concept throughout the area. The main obstacles come from resistance to change, fear and budgetary constraints (Masson, 2011).

Many groups feel that they can provide a service independently for their own client group and are resistant to ceding control to a large group such as SPT. Given the nature of the client groups involved (elderly, disabled, rural) they feel that they know what is best for their passengers. Confidence building is required to assure groups that they can provide services for the greater needs of the community based on value for money, efficient services. Many small groups have invested in computerized scheduling systems; however the return for investment can be poor given the number of services involved. Also the ability to train and retain quality staff is also a problem.

Many groups fear that SPT will understand their business better and that this might lead to a loss of funding streams. Again this can be resolved by SPT working with groups to build confidence that they can continue to provide services (where required) and that SPT will be responsible for scheduling and tendering/funding services. In many cases by introducing service level agreements organizations will have enhanced security compared with the previous funding application models

Investment in ICT has seen significant savings being achieved in the SPT operational area. The cost of ICT services and the operational costs associated with the TDC are largely seen as expensive. At present 12 local authorities contribute funds to SPT to allow them to provide services. However there is no long-term guarantee for this funding.

8. Discussion

Whilst encouraged by a Government policy promoting partnership, the Glasgow case-study shows the benefits of scale in exploiting ICT in flexibly operated transport services. It is also clear from this case-study that the partnership model relies on strong governance and this is currently a barrier to further development.

An important barrier to the take-up of ICT by British CT operators has been the separate development of flexibly operated transport services in the conventional public transport arena and the development of CT. The move towards *partnership-working* is the hallmark of current British Government policy: “We strongly encourage local authorities to form partnerships with the voluntary and community sector when developing local transport solutions” (DfT, 2011). This offers an opportunity for collaboration which is more likely to offer the scale of operation that would benefit from ICT implementation, as demonstrated by the case-study.

Whilst scale of operation can be significantly enhanced by partnership, there are more opportunities for this in Britain than in Australia. Typically, Australian cities, including the capital cities of each State, are much lower densities than typical British cities. Not only does this provide difficulties in conventional public transport provision but does not offer the opportunities to gain from either partnering between adjacent CT groups nor between CT and conventional operators as in Glasgow. It is difficult to see how partnership in Australia could lead to the development of a more holistic public transport mix in the provision of flexibly operated transport services when there is only limited experience outside the CT sector (Daniels and Mulley, 2012).

Australian experience with ICT in providing flexibly operated transport services is limited. A notable early failure was the trial in 1992-3 in Shellharbour, NSW in which many of the aspects now highlighted by the Glasgow case-study are featured. Raimond and Battellino (1994) looked at a cost-benefit approach to the inclusion of computerised management systems to provide deviations from a fixed route and concluded the high capital costs outweighed the benefits to users. Witherby (1996) considered the scheme in the wider institutional context and cites lack of partnership, broadly defined, as a significant contribution to failure. The failure in Shellharbour, might well have been avoided if undertaken later (in time) since it is now well acknowledged that technological advance is not a critical success factor to successfully providing a targeted service (Wright et al, 2008) since many appropriate services can be developed by using low-tech solutions.

Australian CT groups, as distinct from conventional operation trial in Shellharbour, have not invested in the more advanced ICT described in Table 1, but many groups have joined to develop software which integrates their reporting needs with their operations. For example, TRIPS is a client database used by many groups in NSW to link details of their clients with the reporting requirements of funding. TRIPS can be enhanced by an On Board Vehicle (OBV) unit which is GPS enabled and can communicate in real-time with the TRIPS programme and removes the need for post-trip verification. However, scheduling is still undertaken manually. Partnership between groups by the sharing of vehicles has been developed with a web interface but there is low take-up. The barriers to brokering vehicles between groups are more to do with the governance issues similar to those identified in the Glasgow case study and not with the inefficient use of technology.

9. Conclusions

Public transport services in both Britain and Australia suffer from an accessibility gap which is consistently filled by CT services where they are provided.

The economic and social value of integration of the public and voluntary sectors was acknowledged by Audit Scotland in their report on *Transport for Health and Social Care* (Aug 2011) with a recommendation that there is scope for better use of resources and money with more use of integrated

services and partnership working. However, that recommendation must be qualified with the realism that CT is not “cheap transport”; in fact CT will often have a higher unit cost than conventional routed services, especially in rural areas where vulnerable clients often have a reduced ability to pay.

Through the case-study of Glasgow, this paper has highlighted the opportunities of partnership between different public transport providers in achieving sufficient scale to reap the economies presented by ICT use to move to an enhanced level of service provision. There are barriers to achieving this step change of which finding, agreeing and implementing a robust governance model is probably the most important

This is a stimulating time for British CT operators and their partners in statutory organisations, with the optimism of new beginnings, opportunities to explore and chances to develop and work in partnership never offered before. In Australia the CT industry is at a different stage of development from its British counterparts, is more fragmented and is looking for new models of organisation to meet impending funding changes. In both countries there are challenges to be faced to confront and change perceptions and encourage growth and long term sustainability whilst maintaining the beliefs and ethos of Community Transport and encouraging equality for those most disadvantaged in our society.

Acknowledgements

We thank the following colleagues for contributing ideas to this paper: Rachel Milne, Manager, Buchan Dial-a-Community Bus, Aberdeenshire; Brian Masson, Centre for Transport Research, Project Manager for the ICMA project; Dr Nagendra Velaga, Research Fellow, dot,rural, University of Aberdeen.

References

- Audit Scotland (2011) Transport for Health and Social Care, Audit Scotland. http://www.audit-scotland.gov.uk/docs/health/2011/nr_110804_transport_health.pdf
- Cooper, J, Duffell, J, Nelson, J D and Wright, S (2011) A booking portal for shared transport in rural areas, Proc. 43rd UTSG Conference, Open University, January.
- Cooper, J M, Mundy, R and Nelson, J D (2010) Taxi! Urban economies and the social & transport impacts of the taxicab, Ashgate.
- Currie, G (2010) Quantifying spatial gaps in public transport supply based on social needs, *Transport Policy*, 18, 18(1), 31-41.
- Daniels, R and Mulley, C (2012 forthcoming) Flexible Transport Services: Overcoming barriers to implementation in low density urban areas, *Urban Policy and Research*.
- Department for Transport (2002) The Flexible Future. <http://webarchive.nationalarchives.gov.uk/> and <http://www.dft.gov.uk/consultations/archive/2002/frbs/>
- Department for Transport (2011). Community Transport: Guidance for Local Authorities.
- Fu, L, (2002) A simulation model for evaluating advanced dial-a-ride paratransit systems, *Trans Res A*, 36A, 291-307.
- Mageean, J F and Nelson, J D (2003) The Evaluation of Demand Responsive Transport Services in Europe. *Journal of Transport Geography*, 11(4), 255-270.
- Masson, B (2011) ICMA SPT Cost Price Model and Virtual Fleet Report, ICMA project internal report.
- Milne, R (2011) ‘Community Provision for Rural Connectivity’, Presentation to Workshop on Connectivity of Rural Communities, University of Aberdeen, 3rd and 4th October, 2011.

- Mulley, C and Nelson, J D (2009) Flexible Transport Services: a new market opportunity for public transport, *Research in Transportation Economics*, 25, 39-45.
- Nelson, J D, Wright, S, Masson, B, Ambrosino, G and Naniopoulos, A (2010) Recent developments in Flexible Transport Services. *Research in Transportation Economics*, 29, 243-248.
- Palmer K, Dessouky M M, and Abdelmaguid T (2004) Impacts of management practices and advanced technologies on demand responsive transit systems, *Trans Res A*, 38A, 495–509.
- Raimond, T and Battellino, H (1994) The economics of applying IVHS to public transport: a cost-benefit analysis of the Shellharbour Demand Responsive Bus Trial Project, *Papers of the 19th Australasian Transport Research Forum 1994.*, www.patrec.org/atrf.aspx
- Social Exclusion Unit (2003) *Making the Connections*, Final report on transport and social exclusion, UK.
- Velaga, N (2011) *Integrated Flexible Transport Services for Rural Areas: Literature Review*, dot.rural Working Paper, University of Aberdeen.
- Wiltherby, A (1996) Barriers to reform: Institutional and political barriers to the implementation of advanced technology, *Papers of the 20th Australasian Transport Research Forum 1996.* www.patrec.org/atrf.aspx
- Wright, S, Nelson, J D, Cooper, J M, Murphy, S, (2009) An evaluation of the Transport to Employment (T2E) scheme in Highland Scotland using Social Return on Investment (SROI), *Journal of Transport Geography*, 17(6), 457-467.