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A TRANSPORTATION SYSTEMS MANAGEMENT APPROACH TO COMMUNITY BUS OPERATION

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Abstract:

The provision of improved mobility at the local community level is becoming an important issue for local government. To date, traditional operators, and other suppliers of transport services have provided services which are often competitive, or duplicate each other.

This paper suggests an approach to resolving these conflicts, which at the same time will provide more comprehensive service by matching supply of service against needs.

The paper suggests that the time is now appropriate for the introduction of such programmes at local government level.

TSM AND COMMUNITY BUSES

INTRODUCTION

To most people the currently perceived main task of public transport is to meet bulk demands for mobility - the daily peak CBD-oriented movement. The typical response to meeting this demand is with varying degrees of investment in heavy or light rail services, or with the provision of bigger and better buses, and larger amounts of conventional bus services.

There is no doubt that given reliable and efficient service and integrated operational initiatives and practices, such operations can be effective in meeting this demand, even if it is becoming a decreasing percentage of our total mobility requirements. At state and federal levels politicians are perhaps mesmerised by the grandeur of this capital investment, and have become pre-occupied with the operational deficits inherent in this approach.

Current attitudes to this mode-related approach have been outlined by Bowyer and Last (1980) who point out that as planning complexity increases, institutional attitudes need reappraisal, and perhaps more comprehensive information systems need to be developed to allow decisions to be made which are more in line with actual community needs.

To re-inforce this thesis, there appears to be the beginnings of a ground swell reaction to the lack of understanding of problems which the macro/modal approach does not address - specifically the mobility problems of people in low demand density situations, whether caused by geographic location, or personal or social disability.

It is at the local community level that the needs of the "transport disadvantaged" are surfacing. This is well evidenced by the 50 or so Councils in the Melbourne metropolitian area alone which operate community buses. Most, it must be said, have jumped on the "mini-bus band-wagon" as a cure all, but some operate well throughtout operations appropriate to the needs of certain segments of their ratepayer population.

At the local level restrictions on personal mobility lead to social isolation and deprivation in daily living. The following groups have been suggested as being likely to be disadvantaged by lack of mobility, at the local level:-

- preschool children
- adolescents after school and at weekends
- working or unemployed youth without car access

- aged and frail
- resource poor
- information poor
- homemakers without car access
- handicapped
- physically and mentally ill

SCRAG 1978

Destinations are also a useful classification of access problems, and some suggestions relevent to the above groups are:-

- shopping centre
- medical facilities
- recreation facilities
- facilities meeting needs of aged
- parents without partners activity groups
- youth group activity
- specific facilities meeting needs of handicapped

SCRAG 1978

Typically, service deficiencies appear in the areas of:-

- some cross town journeys
- service in low density outer suburban areas
- services in rural areas
- weekend and late night services in metropolitan areas.
- services for groups which have special physical needs.

(Kinnear & Hartnett 1979)

Because these pressures are best expressed at the local level it is appropriate for local government to become concerned with solutions. However, inexperience in the field of passenger transport administration and "knee-jerk" reaction to local political pressure have led to many operations which are inefficient, or not fully effective in service delivery, relative to actual community needs.

At the same time, services provided by specifically oriented service delivery groups have proliferated, which has resulted in overall duplication of efforts and costs, and under-utilisation of resources.

Many community and other services are operated in a way that removes passengers from already struggling conventional services, in situations where conventional services could meet the passenger's needs.

"It has been suspected--- that buses owned by many organisations are not fully utilised and that especially where public funding is involved they should be more widely available to other community groups"

"---it would be a valuable experiment to attempt to co-ordinate existing transport resources (for the handicapped in this case) so as to maximise efficiency----Forseeable difficulties over co-operation and financial equity would again be reduced if future funding were channelled through a regional authority".

(Maddox and Forsyth 1973)

It must be recognised that present systems do provide mobility for the majority of the population, even if the base system <u>is</u> car operation. And as the community does function without signs of distress for the majority there is a limit to community willingness to provide subsidy funding to overcome mobility disadvantage for the minorities. Therefore any improvements to mobility in these areas must be at minimum additional cost.

Efforts to co-ordinate transit and paratransit approaches are surfacing world wide - in some cases by integration under one operator, in others by co-ordinating the activities of several operators, not all of which have a basic role in provision of transport services. However the approaches can be generalised under the heading of regional Transportatic Systems Management (TSM).

There are two aspects to the approach:-

1. The provision of service.
2. The organisation matching supply with needs.

At the macro level this approach includes traffic management, changes to vehicle occupancy levels and various pricing incentives and disincentives. At the micro level the approach is more likely to involve demand modification (particularly related to time of journey) promotion of ride sharing approaches and co-ordination and integration of "para transit" and conventional transit operations.

The aim is to encourage the development and use of low cost methods to make more efficient use of present regional and local resources in a co-ordinated way, and this is as good as definition of a Transportation Systems Management approach as any.

TRANSPORTATION SYSTEMS MANAGEMENT AT LOCAL GOVERNMENT LEVEL

Concept Acceptance

The first point to be made is that this approach will involve changes in the present way of thinking by planners, transport operators and transport users. Acceptance of Francis Brittons "second world of para transit" implies emphasis on satisfaction of need, not delivery of service, as the basic approach. Thus planning and operation should be directed towards solving problems for small market segments, and user oriented, not hardware or systems oriented.

Because we are concerned with the local level and with matching individual requirements for mobility, hopefully by putting these movements together into small parcels, the scale of operation will tend towards many small load movements, rather than fewer large load movements.

This is the "ride sharing" concept and may well involve changes in individual attitudes. Contrast the personal attitude required to travel in a 40 seat bus in relative anonymity with that required to travel in a five passenger taxi, fully loaded with people who have never met before.

Creating the attitudinal changes necessary to obtain acceptance of the TSM and rise sharing concepts is a problem which should not be under estimated. Factors involved include:-

a) An active search for community involvement, and creation of effective means of dialogue between community, groups with specific transport needs, and transport planners and operators.

b) Fostering changes in community attitudes to existing and new types of transport system, which will be:-

- more personally demanding, in the sense of travelling physically closer to others.
- More flexible, as fixed routes, timetables adherance and conventional vehicles are no longer operational parameters.

c) Developing changes in institutional attitudes by operators, regulators and unions.

d) Encouraging acceptance of new roles by:-

- Administration at all levels
- Operators
- Suppliers of labour, paid and unpaid.
- Planners
- Users

System Development

The development of a community transport network under the TSM approach can be divided into four stages:-

Stage I	"How do we decide what to do?"
Stage II	"How do we do it, when we decide what to do?"
Stage III	"What shall we do first?"
Stage IV	"Have we done the right thing and should it be changed, and what to do next?"

Stage I "How do we decide what to do?" This stage involves determination of the scale and method of local involvement. It will involve consideration of the potential methods, decisions on what combination of methods suit the local community best, and how to best develop the community advisory network over time.

Methods considered should include:-

- Advisory committees - small enough to get work done, yet large enough to represent community and not particular lobby groups.
- Public hearings and meetings.
- Citizens participation (by nomination) in the decision making body to represent community, as distinct from seperate groups.
- Newsletters.
- Public opinion surveys.
- Speaker service to group meetings.

To illustrate the challenge inherent in this stage, it is useful to list potentially interested groups.

Suppliers	Local bus operators Local taxi operators School and other social service groups with buses. Community bus operations Any car pool/van pool operations
Users	Social service agencies Public interest groups User groups
Administration	Local government Regulatory authority Relevent State/Federal departments Unions Research groups
Information Sources	Police Churches Doctors Nursing services Meals on Wheels Home Help Social Workers

The challenge is to combine elements of all these potentially interested parties into an effective representative decision-making body which guarantees both community interest and accurate reflection of community needs. These factors are necessary pre-requisites for the supply of local financial resources.

Stage II "How do we do it, when we decide what to do?" This stage involves the development of the TSM components required to match individual/group needs with service provision. A TSM program to achieve this objective includes six basic components:-

1. Information and marketing, this includes:-

   - dissemination of information on services available;
   - selling the concept of integrated services to users and user groups, and to suppliers; and
   - provision of services at appropriate standard.

2. Service development and operation, including:-

a) Selection of service type

b) Funding

c) Controls and incentives

d) Low cost improvements to conventional services.

e) Appointment of TSM project manager

f) Provision of admininstration support

a) Selection of service type:-

It has been pointed out that with small scale operations costs rapidly increase with speed and flexibility of response to demand (Usher 1978). Therefore in a situation where demands will be low in absolute terms, it may be expected that a subscription or pre-arranged service will be the most financially attractive service able to meet the needs of most users. In this service type, demand is channelled to some small extent to conform with the operational requirement of a regular pattern, while still preserving the attraction of door to door service. This service will tend to be more productive in terms of vehicle and driver utilisation, and therefore more cost effective.

It is important to maximise aggregated demand satisfied by a single service, and this is the basis of a ride sharing approach which relies on encouraging people with demand for more or less the same travel patterns (though for different purposes) to use the same vehicle, and to match the size of vehicle and cost of operation to the size of, and revenue derived from, the aggregated passenger movement.

The main operational characteristics of different service options available may be summarised in tabular form.

Table 1. SERVICE OPERATIONAL CHARACTERISTICS

	Vehicle Supplied By:-	Driver Supplied By:-	Timetable Type & Determined By:-	Route Type & Determined By:-	Fare Determined By:-
Conventional Bus	Operator	Operator	Inflexible/ Operator	Inflexible/ Operator	Operator
Demand Services					
Dial-a-Bus	Operator	Operator	Flexible/ Passenger	Flexible/ Passenger	Operator
Route Deviation	Operator	Operator	Inflexible/ Operator/ Passenger	Semiflex/ Operator/ Passenger	Operator
Exclusive Taxi	Operator	Operator	Passenger	Driver/ Passenger	Operator
Share Taxi	Operator	Operator	User Group	User Group	Operator
Subscription Services					
Bus	Operator	Operator*	User Group	User Group	Operator/ User Group
Van Pool	Group/ Employer	Group*	Group	Group	Group
Social Service Bus	Group/ Govt.	Group*	Group	Group	Group
Car Pool	Driver	Self	Group	Driver	Driver

* Driver may be paid or volunteer, but responsibility for provision still remains.

There will be already some or all elements of the following network of service already in existence:-

- basic network of government operated and/or financed rail/tram/bus services
- sub network of - dedicated school bus services
  dedicated industrial bus services
  services for handicapped persons
  services for elderly persons
  exclusive ride cab services
  contract, shared ride cab operation
  formal and informal car pools
  "self drive" operation

Each of these sub networks presently typically obtains funding from diverse sources, including local organisations and local, state and federal governments, and operates to meet the specific needs of the market segment it attempts to satisfy, and to fulfill the role it has set for itself. There is often vehicle underutilisation, and in many cases low wage costs due to the availability of volunteer labour.

b) Funding: Revenue is derived from two basic sources, fares and subsidies. Funding is not simply a matter of obtaining revenue, but primarily matching the quality of service provided with the capacity of the user to pay and the amount of applicable subsidy.

In Victoria, revenue for community based transport can be derived:-

- from fares, subject to appropriate TRB licensing
- from pensioner fare make-up subsidy - which depends on the service being available to all offering passengers, and it being operated on a fare basis
- State Transport Ministry subsidy related to cost of vehicle used (3 year limit)
- State Health and Social Welfare subsidies as application to particular services.
- Local government funds as available
- Federal subsidies as applicable to the particular service

Other revenue sources should not be neglected. These include:-

- revenue from parcels, library and medicine pick up, for example
- vehicles available for alternative uses "out of hours" (eg hire and drive)
- promotional grants from local shopping centres
- advertising on vehicles

- social service club donations
- service donation, eg. volunteer drivers, free maintenance
- Parallel use by other agencies, eg. Post-bus

c) Controls and Incentives: These are the methods by which users on one hand and service suppliers on the other, are encouraged to participate in the integrated scheme. The usual method is to channel subsidy funds through the co-ordinating agency, where explanation of the advantages of co-operation is not persuasive.

d) Low Cost Conventional Transit Network Improvements: By making small adjustments to existing services it is possible that some community needs can be met at no additional cost to the community, and with the benefit of increased fare revenue to the local conventional operation. Factors to be considered in this area are:-

- timetable and route adjustments
- express and skip stop operation to specific destinations
- shelters and information
- subsidised multi-ride passes
- general promotion

e) Appointment of a TSM Program Manager or "Transport Broker": This is probably the central aspect of the total TSM approach, and reflects the substitution of administrative co-operation for cash investment. With the scope of the approach already outlined, it will be obvious this is a full time dedicated position. Duties will include:-

a) Stimulate supplier participation in the program and contracting with transport suppliers, including both business and non profit services, for the provision of different types of service in different areas, as required.

b) Stimulate user participation in the program and contract to agencies for the provision of service to agency members.

c) Selling rides on a concession basis to individuals not included under (b), using a pre-purchase discount ticket system.

d) Provide a flexible funding mechanism.

e) Carry out monitoring procedures, and modify service supply as required.

f) Ensure provision of adaquate resources.

f) Provision of Adequate Administrative Support: Apart from providing necessary administrative support for the brokerage function, this area includes policy support at Council level, local government pressure at higher political levels and the fostering of community feedback networks.

Three of the above are critical to the development of a local government based TSM program. These are the development of the brokerage function, the development of cost effective paratransit services to meet particular needs, and the use, improvement and exploitation of existing networks.

Stage III "What shall we do first?" This stage involves consideration of the needs of different groups within the community on one hand, and the practibility in terms of both operation and cost of supplying service to meet these needs on the other.

Several goals for a TSM program at local government level may be suggested:-

First the basic TSM aim already quoted i.e. "to encourage the development and use of low cost methods to make more efficient use of present regional and local resources in a co-ordinated way",

Second to be responsive to specific community needs,

Third to make better use of already developed community facilities,

Fourth to develop community identity,

Fifth to meet specific social aims not already covered as seen to be worthwhile.

The implication of the first two goals must surely be to balance the need/demand side with all aspects of the supply side, including costs. Changes and improvements must lead to an increase in passenger journeys - all systems taken together - otherwise it will be a matter of a lot of effort and probably additional subsidy cost for no return.

On the demand side there may be a capability to encourage walking and cycling, journey time changes, and reduction in travel need by re-location of facilities or improvements to service delivery.

In deciding what to do first the priority of needs is established, and matched with what can be most simply provided in both practical and financial terms.

Because initial success is critical to acceptance of the TSM concept and indeed to acceptance of any operational innovation, it is suggested that development be staged:-

Simple are service concept in small area

One service concept in larger area

New service concepts introduced singly, integrated and tested before further change.

The ultimate is to achieve a integrated multi-modal system, co-ordinating specific function paratransit services and line haul transit operation into an effective whole.

Stage IV "Have we done the right thing, should it be changed, and what to do next" An important factor in the approach is constant feedback of the success, in terms of need satisfaction, of the operation, and at what relative and absolute financial costs. As this becomes satisfactory for each development, the next most important need is addressed.

CONCLUSION

It is suggested that the time is now appropriate for planners, operators and all levels of government to begin considering a TSM structured ride sharing approach to the provision of passenger transport services at the local level.

Several factors are beginning to operate which will support this trend, including:-

- a greater awarness of costly service duplication, and of resources and actual operational costs.
- fuel cost and supply pressures
- the need to provide integrated feeder service to make existing fixed route operation more productive in low density surban areas
- 1981 as the "International Year of the Disabled Persons"

Responses to pressures have so far been unplanned and unco-ordinated. It is important that financial and resource utilisation is maximised, particularly at the local level where small segmented needs are to be satisfied.

I suggest the best approach is that of Transportation Systems Management.

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