WORKSHOP 4 REPORT
Realising the Potential Benefits of Demand Responsive Travel

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Workshop Four – 18 to 20 participants, 12 Countries, 10 papers
The workshop explored opportunities and challenges of ‘mainstreaming’ DRT into existing public transport systems

Key Workshop Questions

i. How do we **DEFINE DRT** services? What are the major **DRT SERVICE TYPES/FORMS**?

ii. What are the major **CHALLENGES and BARRIERS** to the successful adoption and development of DRT?

iii. What **RATIONALE/OBJECTIVES** do DRT service seek to address? What is the **ROLE of DRT** in the transport ecosystem?

iv. What are the major **DRT BENEFITS** of services

v. What **SERVICE DESIGN FACTORS/APPROACHES** act to impact the success and failure of DRT services

vi. What **REGULATORY/ORGANISATIONAL FACTORS** impact DRT provision and how can they best be structured to achieve successful DRT development.

vii. What are the important **DRT USER PERSPECTIVES** affecting usability and the quality of the passenger experience

viii. What are the major **SUCCESS/FAILURE FACTORS** affecting DRT performance?

ix. What are the **FUTURE OPPORTUNITIES/CHALLENGES** to ongoing DRT service development.
DRT is flexible on demand (shared) transit – it lies between conventional PT and taxi.
We are on the cusp of widespread microtransit

“...the reduction of technologies’ costs, have made the provision of flexible and more customer-centric public transportation more feasible.”

– (Volinski, 2019)
Contemporary Issues – what about paratransit and community transport DRT’s?

DRT Outcomes Review

• **Commercially viable**
  • Very few

• **Acceptable subsidy**
  • Also very few – DRT has same or less subsidy than alternative services

• **Justifiably high subsidy**
  • Specialist niche DRT markets
  • The most common type of surviving service

• **Financially unsustainable**
  • Many in this category

Enoch et al. (2004)

“Most of the services that have stopped have done so because of the high costs in relation to their patronage” Oxley (1979)
Contemporary Issues – commercial DRT’s operate in less regulated developing countries – chaotic but fill an important gap in conventional transit.
DRT Review results; 3 Eras – Microtransit biggest failure rate – high cost the key driver

30% of all DRT’s withdrawn in 2 years
50% of microtransit DRT withdrawn in 2 years
Para/Community Transit highest retention rate

DRT Eras – Success and Failure

- **1970 – 1984**: Early Dial-a-Bus services
  - First attempts to run demand responsive services

- **1985 – 2009**: Paratransit/Community Transport era
  - US paratransit services developed in response to Americans with Disability Act (ADA)
  - UK bus deregulation outside London resulted in investment in special need style services to fill gaps in withdrawn social bus services

- **2010 – 2019**: Tech-based Micro-Transit DRTs
  - New technologies are being deployed for modern ‘micro-transit’ based DRTs

**Av. Cost $/veh-hr**
- Early ‘dial-a-bus’: 150.37
- Para/Community Transport: 63.07
- Tech Based Micro-Transit: 123.18

**Av. Cost $/pax**
- Early ‘dial-a-bus’: 21.26
- Para/Community Transport: 13.8
- Tech Based Micro-Transit: 42.72

Average (Real) Cost Per Vehicle-Hour

- 1970: $0.00
- 1975: $30.00
- 1980: $60.00
- 1985: $90.00
- 1990: $120.00
- 1995: $150.00
- 2000: $180.00
- 2005: $210.00
- 2010: $240.00
- 2015: $270.00

**Cost**
- 1970-1984
- 1984-2009
- 2009-2019
Is microtransit trying to reinvent the wheel…and getting it wrong?

<table>
<thead>
<tr>
<th>DRT Era</th>
<th>Early ‘dial-a-bus’</th>
<th>Para/Community Transport</th>
<th>Tech Based Micro-Transit</th>
</tr>
</thead>
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![Graph showing average cost per vehicle-hour for different DRT eras.]

![Table comparing average costs for different microtransit types.]
We Synthesised the Current DRT Situation – Starting with Transit System Goals

**Main Public Transport System Goal**

- **Car Dominant**
  - Social
    - Fringe/Rural Low Density
  - Peak Congestion Relief
    - Many Service Gaps
  - PT For Whole City Travel
    - Few Service Gaps

**Spatial Context**
High/Low Regulation DRT’s fit into this framework explaining objectives, types within their context.

**Main Public Transport System Goal**

**Spatial Context**
- Fringe/Rural Low Density
  - High Regulation
- Low Regulation
  - Developed Countries (Subsidy)
  - Developing Countries (Profit)

**Social**
- Door to Door:
  - Paratransit
  - Community Transport

**Peak Congestion Relief**
- Peak Only
  - First Last Mile
  - Low Coverage Pockets
  - Cross Corridor dispersed?

**PT For Whole City Travel**
- First Last Mile
- Low Coverage Pockets
- Cross Corridor; dispersed low density

- Jeepney
- Matatu
- Tro-tro

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**Car Dominant**

**PT Dominant**
This framework also speaks to a policy imperative to move away from single occupancy vehicle travel to high occupancy shared travel solutions.
We recommend a clear objectives framework – and a focus on three DRT target market for DRT service development.

### Objectives Framework

**Add Social Exclusion**

- Poor/No PT service
- Disadvantaged, low income
- Impaired/Isolated

**Target Market**

- Car users who might be encouraged onto PT using DRT (Mode Shift)
- Low density high income areas

**DRT Development Target Markets**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>A. Social Objectives</th>
<th>B. Efficiency/Environmental – Congestion Relief Objectives</th>
<th>C. ALL Objectives</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>• Poor/No PT service</td>
<td>• Car users who might be encouraged onto PT using DRT (Mode Shift)</td>
<td>• Public Transport Users which might be lost in future (Retention)</td>
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<td></td>
<td>• Disadvantaged, low income</td>
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**Locations Times Where Public Transport service is BELOW User Requirements**
Implementation Pathways can follow well established principles...

DRT Development Implementation Pathways

DRT Implementation - Steps

1. Market Definition
2. Understand User Needs
3. Product Definition
4. Business Model (funding)
5. Delivery Strategy
6. Customer Facing

DRT Implementation – Key Considerations

- Scale
- Pricing
- Public Support
- Deployment Strategy
…but will benefit from a Flexible Agency Mobility Service (FAMS) – MaaS is an obvious framework.
Key Workshop Question - 9

ix. What are the FUTURE OPPORTUNITIES/CHALLENGES to ongoing DRT service development.

- **Opportunities**
  - MaaS
  - ScAV’s yeah!!!!!!!!
  - [Scalable cost effective focussed] tech
  - Learning from the lessons and history
  - Shift away from the private single occupancy vehicle
  - More and growing attention to objectives behind DRT
  - Moving RIGHT (on our graphic)

- **Challenges**
  - Protectionist attitudes from many
  - Telecommuting
  - Mindless HYPE promotions of useless technology for the sake it which doesn’t work and which doesn’t achieve our aims; anything to do with single occupancy vehicles is BAD BAD BAD BAD BAD BAD!!!!!
  - Competition from new tech modes
  - Aligning DRT and Transit policy
RECOMMENDATIONS – for POLICY

- FAMS; MaaS
- Review, share, focus existing knowledge (smarter website, MAMBA knowledge base repository)
- Policy – clearer objectives and resource support to solve it, allocation of responsibility to implement
  - Clarity relative roles and public and market
- Bureaucracy – need to be proactive not reactive
- Occupancy targets minimum occupancy minimum, employ VMT caps
- Developing; coordination, regulation, public from informal and informal sector
RECOMMENDATIONS – for RESEARCH

- Need to better understand and quantify benefits
- Better understand user needs
- Demand forecasting models
- Post implementation evaluation
- Better understand costs and revenue (modelling)
- Ways to share and retain existing knowledge and use it in future practice.
- Understand sharing and user experience barriers
- Develop KPI where DRT may be attractive but we don’t realise
- Develop DRT business models for car use mode shift