



# Providing for Customer Needs in Public Transport Design

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# Legislation Driven No Certificate = No Sale

- Max height from road to bus floor
- Min door sizes
- Min width of gangway
- Max height of interior steps
- Max floor slope angles
- Handgrab size, position and colour
- Min number of Priority Seats
- Strict wheelchair access rules



# The Traditional Approach

- High-floor line
- External to vehicle
- Requires leaving the pavement
- Disconcerting
- 'Extreme' solution for reduced-mobility, ambulant passengers





# Touring Coaches

- High-floorline
- Roadside access direct from pavement
- Inconvenient for non-wheelchair users





# Inter-Urban Buses

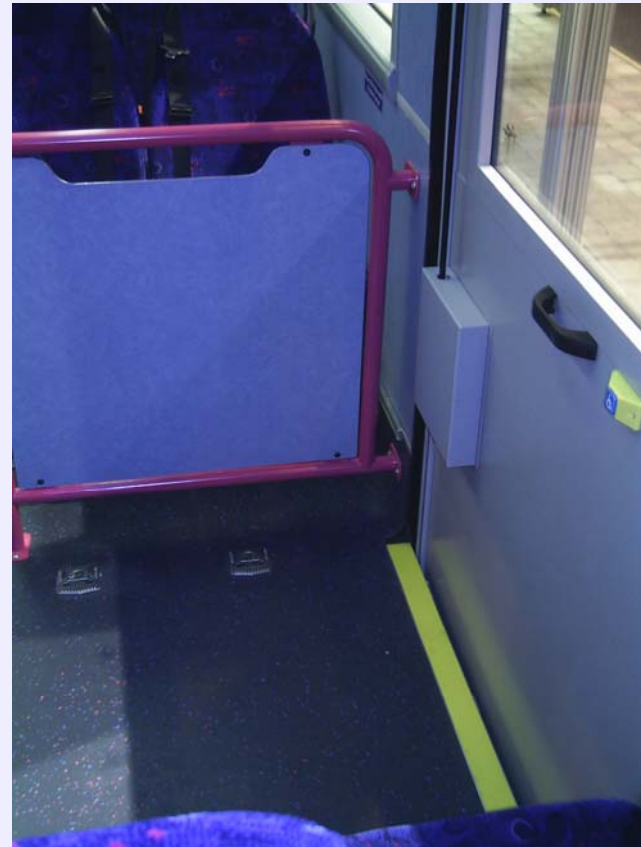
- Kneeling bus suspension
- Narrower front entrance door with hand-holds each side
- Wide reduced mobility door





# Inter-Urban Buses

- Direct access to low-floor area
- Access ramp, not a lift
- Greater dignity for reduced mobility users
- Less restriction for fully mobile users





# City Buses

- Low-floor, flat for access to most seats
- Separate Entrance / Exit doors with handgrabs to each side
- Priority Seats in flat floor area.
- Designated Wheelchair area





# Priority Seats

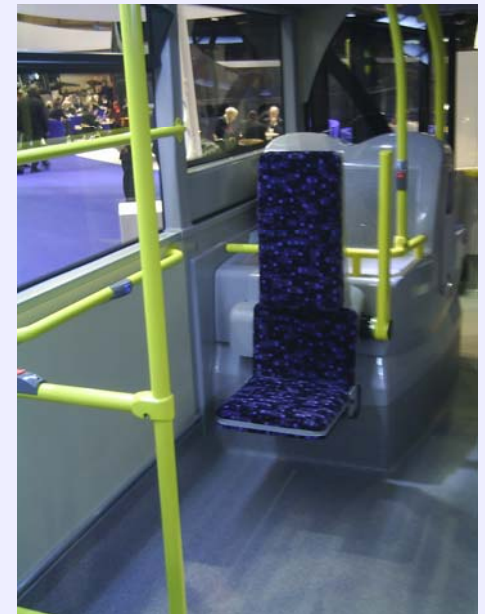
- Clearly marked!
- Moveable armrests
- Dedicated bellpush





# Wheelchair Area

- Cushioned back and headrest
- No obstacles in floor
- Dual purpose seat – often used as a Mum + Buggy area
- Distinct from Priority Seat area





# Who is driving change?

- SMMT / DiPTAC research
- SPT and similar bodies
- EU Law
  
- Current emphasis is on Environmental issues



# Who should we ask?

- Customer Clinics
- Other Professionals
- Academia



# Future Developments?

- Automated steadying / clamping device
- Versatile to accept all types of wheeled mobility aid





# Understanding the Need!





# Thinking Differently

- Optional 'drop-down' step
- 'Aircraft-style' hand rails





# Thinking Differently

- Continental-style?





# Thinking Differently

- Bringing the bus to you!
- Ultra-low-floor minibus.
- Useful in narrow city streets

