



POLICY LEARNING IN INFORMATION TECHNOLOGIES
FOR PUBLIC TRANSPORT ENHANCEMENT

GOOD PRACTICES – PUBLIC TRANSPORT PRIORITY SYSTEMS

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REAL TIME PASSENGER INFORMATION SYSTEM, BUS PRIORITY AT SIGNALS, DISABILITY ACCESSIBILITY

General information

Description

Cambridge Busway is the implementation of a 16mile / 25km guided bus way from St Ives to the centre of Cambridge. The scheme has been constructed on the alignment of a disused railway to provide a guided bus service. The scheme uses guided buses along the length of the scheme. There are a range of technologies to assist in the scheme and to make the scheme as attractive and efficient as possible. These include the following technologies; on bus CCTV, smart ticketing, real time passenger system information, traffic signal priority and passenger WIFI.

Background and Context

Cambridge is a university city with a population of 172,000. The city is known as the cycling city and it continuously tops the surveys of the highest proportion of cyclist's trips to work in the UK with 25% of all commuters using their bikes. These high figures are assisted by an extensive network of on and off highway cycle facilities and extensive cycle parking. Cambridge as with most urban centers suffers from congestion along the main corridors into the city.

The city center has Urban Traffic Management Control. To minimize the congestion within the city center Cambridge have implemented a radical access restriction with associated information provision which has cut city center congestion and improved the reliability of the bus services in the area. In 2005 all buses operating in Cambridge and surrounding authorities area were fitted with GPS tags and there is a city wide RTPI system installed at a number of shelters. The information is also

available via a free Android or iPhone app and through Cambridgeshire County Councils website.

Approximately 20km to the north west of the city is the town of St Ives. The town has a population of 16,000 with a high proportion commuting to Cambridge. St Ives and Cambridge used to be connected via a rail link which was shut to passenger transport in 1970 and freight service in 1990. The only link between the two is via the congested A14.

The Busway scheme went operational in 2011. The 25km route has 20km of guided bus way. There are 30 specially adapted buses running along the route that have been purchased by the bus companies. The scheme introduced 2 park and ride sites and has 9 stops along the route with associated passenger terminals.

Policy design details

Policy Design Steps and Timing

1990 investigated the possibility of a light railway. 1992 Cambridge Guided Bus Study outlines the practical benefits over a railed option.

Cambridge to Huntingdon Multi-Modal Study 2001 demonstrated that a guided bus offered the best cost benefit ratio over other options. Findings were then presented to the Government who recommended that the council came forward with a further developed scheme to allow the scheme to be included within the 2003 / 2004 local transport capital expenditure. The scheme was provisionally accepted subject to a Transport and Works Act (TWA) inquiry that required a wider consultation on the plans coming forward.

A public enquiry was undertaken in 2004 to examine the proposals in light of some strong opposition to the proposal. On winning the enquiry the Government awarded Cambridge the required funding.

The primary contractor Bam Nuttall, was awarded a design and build contract in 2006. The detail design of the project was undertaken by consultants Arups / Parson Brinkerhoff.

Actors Involved

Cambridgeshire County Council - The authority who is the key driver behind the scheme. They are responsible for the operation of the scheme.

Central Government – Has been the main funding body behind the scheme.

Arup - Employed by Cambridgeshire County Council to undertake the preliminary scheme design and business case used to secure central Government approval.

Steer Davies Gleave – Acted as project manager for Cambridgeshire County Council for the scheme up to the planning enquiry.

Bam Nuttall – Awarded the scheme design and build contract.

Arups / Parson Brinkerhoff – Employed by Bam Nuttall to act as the detail designers of the scheme.

Atkins - Cambridge term consultants served as the council project manager during the construction stage of the project.

Stagecoach / Whippet – Commercial bus operators who have entered into a 10 year partnership to operate the services.

Decision Making Process

2001: Findings of the Cambridge and Huntingdon Multi Modal Study were used by central Government to give Cambridge the green light to further the proposals.

2002: The government reviewed the business case and scheme design and awarded the funding for the scheme through the Local Transport Plan process.

2004: The scheme was submitted for planning and subsequently went to planning appeal which the scheme successfully won.

2006: The scheme was awarded to Bam Nuttall following an open tender process for a £90million contract.

Implementation details

Implementation Steps and Timing

As part of the planning process in 2005 the Compulsory Purchase of sections of the scheme was undertaken.

The design and build contract was awarded to Bam Nuttall in 2006.

The original programme was for the scheme to be completed by Autumn 2009 but delays and quality issues around the scheme meant that it did not open fully till August 2011.

ICT/Infrastructures needed

The Cambridge Busway has a significant amount of ICT that is assisting in making the scheme successful, including:

Real Time Passenger Information System – the system uses Vix real time information system and associated shelter screens. The system is fully integrated into the county wide system.

Bus WiFi – to assist in the passenger experience free WiFi has been included on all services using the Busway.

SmartCard – The Busway uses the Vix ticketing machine.

Bus Priority – Local bus priority has been installed at all junction intersections along the route of the Busway.

There is also an operational support center that monitors the track to ensure that it is clear and the stations are safe, there are 57 CCTV cameras along the route. Some of the track is liable to flooding and sensors have been installed in the track to monitor this. There is communication to the service vehicles on the track to allow the appropriate action to be taken if there is an issue.

The Busway route has been constructed by civil engineering contractor Bam Nuttall. The Busway consists of 20km of constructed guided bus route. The route has been constructed from concrete beam sections that are 30metres long with associated piling foundation that minimizes the associated on-going maintenance of the scheme. The busway crosses existing highways at 12 locations so transition points were required. Aside from the track the largest infrastructure was the replacement of an existing 220meter viaduct over the River Great Ouse.

The scheme included 2 park and ride sites and 9 stops. The route has a 2nd branch line to allow the Busway to service new areas of development. The route required the alteration to an existing bridge structure to allow double decker buses to pass underneath and a bridge to cross the network rail mainline.

The scheme attempted to be as environmentally friendly as possible by using collected rain waters in the concrete making process, the 30meter concrete beam sections were cast onsite to minimize the transit of the materials and 1.8million recycled tyres were located between the beams to provide a drainage medium.

Human Resources

It is estimated that CCC had 6.5 staff working on the project during the implementation stage of the project.

For the operation of the scheme there are 6 coordinators and a team leader who are employed to operate the control hub for the scheme. The costs of these resources are covered by the operator fee charged to use the infrastructure. There is also a

CCC officer who has overall responsibility of the scheme but this role is undertaken as part of his overall responsibility as Bus Operations & Facilities Manager for the County Council.

Monitoring Procedures

The scheme is fully monitored for operational performances through the RTP1 system and the day to day performance through the use to the operational centre.

Supporting Mechanism

At the launch of the service there was a structured media campaign to aid the awareness of the service. All the marketing and service vehicles have matching branding to create a strong image.

The service has its own supporting website.

Results

Expected vs Actual Benefits

It was forecast that in the first year of the scheme opening there would be 1.75million passengers rising to 3.5million passengers by year 4. The actual number was 2.5million passengers in year one which is 43% higher than the original forecast. In the second year of operation, till August 2012, 2.62million passengers had used the service.

Quantitative Results Achieved

The journey time of the route has not seen any notable improvement over the previous journey time but the system has allowed the reliability of the journey to be improved.

Qualitative Results Achieved

A customer survey was undertaken in May 2012. The key findings of the survey were:-

The Busway is contributing to reducing the number of private vehicle trips in the area, as 24% of the passengers who made the same journey before the Busway opened had switched from car (as driver) and 13% had changed to the Busway from being given a lift.

78% of users surveyed thought the arrival time at their destination is more reliable than using a car.

74% of users thought that the Busway is quicker than using a car.

83% of user thought that the Real Time Information was useful.

60% of users thought the availability of free WiFi on the bus was useful to them.

Key Considerations

Lessons Learned

At the inception of the project a multioperator smartcard was not a commercially available tool but this is a required upgrade to minimize the confusion fare structure and operation issues.

Though the ticket machines that where procured through an open tender process are functional they lack some of the added feature that would allow extra functionality to be added. It is felt that the specification that was used to tender was not fully market tested before issue to ensure that the functionality was deliverable and it is possible that some suppliers chose not to tender due to the unachievable nature of the specification.

Primary Obstacles

The scheme has received a lot of negative press due to the high expense of the scheme and highlighting the teething troubles that have been experienced. But with the continued success in terms of passenger number the scheme is beginning to improve its public image.

Critical Success Factors

Ensure a good working relationship between the bus operators and the local authority.

Good operating RTPI systems allow customers to make informed choices of tickets to be bought dependent on the operators that will next arrive at the bus stops.

Transferability Considerations

Ensure that the specifications that are to be used for tender are market tested to ensure that functionality is deliverable.

Though competitive tender drive best price is doesn't allows deliver best solutions. Authorities should be mindful when setting criteria and quality questions to ensure that best solution is deliverable.

Contact

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