Mainstreaming Urban Transport Innovation

GUIDELINES FOR ASSESSING

the Transferability of an Innovative Urban Transport Concept

NICHES+ is a Coordination Action funded by the European Commission under the Seventh Framework Programme for R&D, Sustainable Surface Transport

What is it about?

The fulfilment of the NICHES+ mission "to promote the most promising new concepts, initiatives and projects from their current niche position to a mainstream urban transport policy application" is strongly dependent on transferability issues. These determine the extent to which an innovative concept can be implemented in another town or city. They were investigated in some detail by the NICHES+ project and a methodology was developed for assessing the transferability of Innovative Concepts. These guidelines explain the methodology and how it can be applied.

I live here...

Worcester city centre

... can I have this?

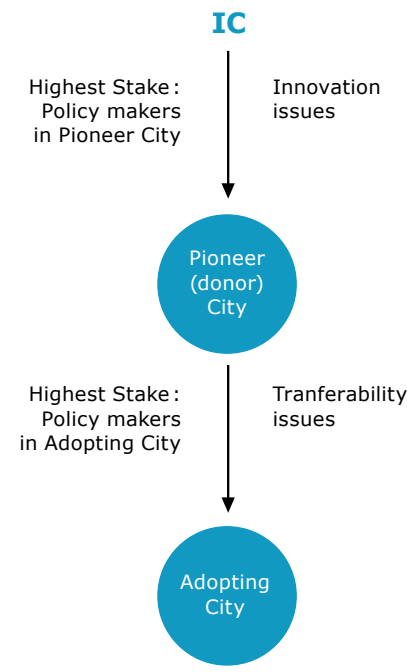
Nantes Busway

Characteristics

Innovative concepts can cover systems and services, and range from schemes aimed at improving organisation and training e.g. establishing new mobility information services, to new technologies and infrastructures e.g. a new transportation system such as buses with a high level of service.

In the transferability process, cities may be donor cities i.e. cities with an innovative concept (IC) to offer, or adopter cities i.e. cities wishing to adopt an IC already implemented in a donor city. By implication, the donor cities may also be the innovators or pioneer cities, who have had to look at the issues surrounding the implementation of a new IC for the first time.

Figure 2.1: Implementation of innovative concepts: the context and stake for transferability issues



Clearly the context in the donor and adopter cities is likely to be different in a number of respects, e.g. size (of population and networks), legal and institutional structures, etc.

The methodology developed in NICHES+ for assessing transferability involves:

- the identification of the issues, and particularly the success factors and barriers that will affect the implementation of a new concept in a particular context, and
- an assessment of the issues to show if implementation in an adopter city with a different context will be practical.

This methodology is described below using as a worked example an exercise to study the transferability of buses with a high level of service (BHLS) as implemented in Nantes in France (the donor city) to Worcester in the UK (the adopter city).

Key benefits

The methodology shows the success factors and barriers to implementation and in particular, if it is practical to try and transfer an IC implemented in one city to another where the context may be different.

By implication, the same approach can be used to show if it is practical to try and implement a brand new concept in an innovation city and its own particular context.

Is this something for us?

The answer is Yes if:

- you are a town or city looking to adopt a scheme implemented in another city, or
- you are an innovation city looking to implement a new IC of your own and for the first time,

and, in both cases, you wish to understand the success factors and barriers to implementation before you proceed.

Successful implementation of an innovative concept or package of concepts in a given city should provide grounds for transferring the concepts to other cities, if the right conditions are met. However, the replication of a success in a different context is subject to certain conditions.

Check list	Yes / No
Are you looking to implement a new IC for the first time?	
Are you looking to adopt an IC from another city?	
Do you have contacts with an understanding of the IC in relation to the political, economic, social, technical and environmental context of the city or cities concerned?	
Do you have access to experts to fill any gaps?	

With regard to the last point, it may be advisable to employ an expert or consultant with the necessary knowledge and expertise to assist with the exercise.

The success of an innovative concept will depend on many factors, some related to the planning, implementation and operation of the concept while others relate more to the context of the concept in terms of the physical, organisational and institutional aspects. It is therefore important to identify those factors which are key to the success of the concept and which must also be addressed in any new location. It is also valuable to identify those factors which have proved difficult and have created barriers to success so that they can either be overcome or transferability avoided where such factors exist.

Benefits, costs and challenges

The benefits of a transferability assessment exercise are:

- to show how an IC could be implemented successfully in another town or city;
- to encourage the transfer of good practice;
- to assess whether the success of an IC is dependent on any particular conditions, and whether the success achieved and the lessons learnt in one 'city' can be transferred to other 'cities'.

The costs involved are mainly those associated with the need to assemble a team with the necessary expertise and the time to prepare and conduct the assessment exercise, and to analyse and interpret the results.

Benefits

For a donor city, there is considerable prestige in holding the status of a pioneer or catalyst for a transport intervention which makes a significant contribution to more sustainable urban mobility. This status may result in direct benefits for the donor city, particularly when seeking funding for future transport interventions where the track record of success (both in the local context and as a catalyst to wider implementation benefits) may prove persuasive. Donor cities may also benefit from being in a position to sell their experience to future adopting cities.

For an adopter city, there are clear benefits when seeking to introduce an IC from being able to demonstrate feasibility by reference to an acknowledged existing successful application. It also reduces the risk of implementation to be able to point to proven success. Equally, an adopter city can learn the lessons from the donor city's experience of implementation to hopefully avoid mistakes and better exploit opportunities associated with implementation.

Costs

Costs are involved to assess the context conditions in the donor and adopter cities which will ideally involve discussions with a number of experts in the field as well as with representatives from both the donor and adopter cities. These costs will be borne mainly by the adopter city who will need to provide staff, experts and resources to liaise with local stakeholders and visit the donor city. Some costs may also be borne by the donor city who must be willing to spend time in visits and discussions with the experts from the adopter city.

Challenges

There are no cities with exactly the same conditions. Cities can be different from each other in many aspects of transport and traffic conditions (demand, supply, infrastructure, traffic control and management, etc.), and other factors including geographical, environmental, demographic and socio-economic conditions, cultural backgrounds, and institutional and legal frameworks. In most cases it will also be necessary to liaise with users and stakeholders and ensure their support (see below). Therefore, it is a challenging task to make sure that success in one city can be replicated in another city.

Users and stakeholders

Experience from the NICHES and NICHES+ projects shows that a sound understanding of user needs is key to make transport innovations a success. A second key factor is the composition of the right project team and the definition of how to involve other stakeholders that influence the process. It is clear that each local context needs to be looked at individually and that user needs and stakeholders for implementation will differ from place to place. In a transferability assessment exercise it is therefore recommended that special efforts are made to identify the main users and stakeholders and to engage them in the process in order to address their needs and concerns, and try to win their support.

From concept to reality

The methodology developed in NICHES+ for assessing the transferability of an IC uses a 6 step approach as outlined in the box and described in detail below.

step 1 →	step 2 →	step 3 →	step 4 →	step 5 →	step 6
Clarify the impacts and measures of success of the IC.	Identify if up-scaling is required and take into account subsequently as appropriate.	Identify the main components of the concept and its context relevant to transferability.	Identify the relevant characteristics of each component and its importance in the current i.e. donor context.	Assess the likely ease or difficulty in achieving the required level of importance of the characteristic in a receiving i.e. adopter city.	Consider the set of values across the characteristics and assess the likely potential for transferability and any conditions that may be required.

Preparation

step 1 → step 2 → step 3 → step 4 → step 5 → step 6

Step 1. Impacts and measures of success

Impacts and measures of success provide the essential justification and supporting evidence for why an IC should be considered for application by another city and hence for transferability.

Generally, only successful innovative concepts will be considered as candidates for transfer to another city. The question of "what is a 'successful' concept?" is obviously debatable, but ideally, success should be measurable, e.g.

- in terms of the extent to which particular objectives and/or targets are achieved, such as reduced fuel consumption and emissions by a specified percentage;
- whether positive socio-economic benefits are achieved in terms of a benefit cost ratio or a multi-criteria analysis.

The results may need to be substantiated as statistically robust, or the judgement of experts taken.

It is obviously important that there is clear evidence of success in terms of positive change in order to warrant effort on transferability. Identifying these impacts and success factors is therefore an important first step.

Worked example: Transferability of BHLS from Nantes to Worcester

Impacts and measures of success

Impacts and measures of success

Impacts on efficiency (capacity, journey time, congestion etc.)	Worcester is a historic city so can't provide segregated bus lanes everywhere. But BHLS use bus lanes where possible, receive priority at signals to avoid congested traffic, and provide more reliable journey times. Capacity can be similar to a tram.
Impacts on safety	Safer than a conventional bus courtesy of separation. Improved safety is also expected for cyclists and pedestrians.
Impacts on environment (emissions, noise, visual intrusion etc.)	Environmental impacts are reduced as the vehicles have modern, low emission engines and there is less stationery traffic. Reduced traffic is also expected as a result of drivers leaving their cars in P&R sites where they are provided.
Accessibility	Buses can dock more precisely, and with raised curbs can provide level floor access e.g. for wheel and push-chairs. The route also can be flexible, as the vehicles are not track bounded.
Vehicle occupancy	Vehicle occupancy is expected to increase due to increased reliability and comfort and increased availability of P&R facilities, which should also help mode shift away from cars
Passenger waiting statistics	Buses run more reliably to schedules. Waiting times are more predictable.
Trip statistics	Expected figures are available from a modelling exercise. Usage will be monitored to confirm benefits.
Benefit : Cost Ratio (BCR) value	Forecasts are available from a modelling exercise and show that a BCR of at least 2:1 should be achieved. The figure will be confirmed after implementation.
Multi-Criteria Analysis (MCA) results	MCA analysis has been undertaken and shows that BHLS perform well against a range of criteria.

Step 2. Is up-scaling required?

Determine if scaling up (or, in some cases, scaling down) of the innovative concept is required for transferability. If it is, recognise the requirement and implications in the subsequent steps.

A city that is seeking an innovative approach to improve its transport situation or address a problem will generally be looking for a concept that can be applied on a city-wide basis or at least in a significant manner. This means that generally a concept needs to be considered in its fullest form where possible, so for concepts where up-scaling is appropriate the up-scaled version of the concept should be considered for transferability.

For instance, where an innovative concept (such as access control) has been applied to the whole of the central area, up-scaling is not required as the concept is applied at the city level already. Where an innovative concept is applied along a specific route or corridor (such as public transport priority), up-scaling may or may not be applicable depending on the nature of the concept and the uniqueness of the route or corridor. Where an innovative concept has only been partially applied (such as 10% of the bus fleet converted to biofuels), then up-scaling should generally be readily applicable.

In a few instances, it may be appropriate to consider down- as opposed to up-scaling e.g. where an implementation in a large city is to be transferred to a smaller city, and/or perhaps, reduced in scope.

The requirements and possible implications for up- or down- scaling must be born in mind in the subsequent steps.

Worked Example: Transferability of BHLS from Nantes to Worcester
Up-scaling

Up-Scaling required?

No up-scaling is required for Worcester compared to the reference concept i.e. the Nantes Busway, as both the existing and proposed schemes operate on corridors of similar length, with broadly similar numbers of passengers, buses and stops.

Step 3. Identify the main components of the innovative concept and its context relevant to transferability

Many factors can contribute to the success (or failure) of an innovative concept including the components of the concept itself, transport/traffic conditions, geographical, environmental, demographic, socio-economic, cultural backgrounds, institutional and legal frameworks, etc. Some of these factors may already have been identified as success factors and barriers from an evaluation exercise conducted in the donor city, but there may be other aspects of the innovative concept or its context which have had an influence on its success or caused problems. These need to be identified so that their relevance or necessity concerning transferability can be assessed. The Table shown under Step 4 below provides a list of components for consideration in the example of assessing the transferability of a BHLS scheme. This list should be revised as necessary to make it appropriate to the particular IC being considered.

Step 4. Identify the relevant characteristics of each component and its level of existence or achievement in the current context

This step simply breaks down the main components into characteristics relevant to transferability and notes the relative level of importance (as high/medium/low) of each characteristic as perceived by the donor city. Examples of characteristics are shown in the table below, e.g. for the component 'Strategies and policies', examples of characteristics are given as: 'pollution reduction policy', 'public transport policy' and 'accessibility policy', etc. These should be revised if necessary so they are appropriate to characteristics relevant to the IC concerned.

Worked example: Transferability of BHLS from Nantes to Worcester

Characteristics of components

Components	Characteristics of the components
Strategies and policies	• Pollution reduction policy • Public transport policy • Accessibility policy • Traffic management policy • Land use policy • Sustainability • Innovation policy
Services offered	• High quality service • Frequent service • Information services • Improved accessibility • Parking
Target population	• General public • Businesses • Former bus users
Geographical area covered	Corridors
Finances	• Capital costs of design, planning, implementation • Running costs • Revenues • Whole life costs
Human resources	• Staff numbers required • Skills and training required • Administrative support
Stakeholders involvement	• Users • Operators involved • Businesses affected • Government • Taxi and bus operators, driver's unions
Legal or contractual requirements	• Partnership agreements required • Licenses required • Contracts
Organisational or institutional aspects	• Administrative structure • Procedures

Technical requirements	• Equipment and Tools • Information/data • Ticketing /payment • Software • Communications • Infrastructure
Implementation and management aspects	Security
Awareness and communication	• Publicity and public relations • Citizens involvement • User communication
Demographic issues	• Male/female involvement • Age distribution
Wider issues	• Culture / lifestyle • Climate • Mobility patterns • Political • Topology • Public acceptance • Technology risk • Security • Safety

A full tranferability assessment table can now be constructed as shown in the table hat is joined to this document (separate insert). The table, which comprises two parts, then needs to be completed from the appropriate perspective.

For a typical transferability assessment exercise this will be from the viewpoint of the adopter city, but in the light of the experience of the donor city and with support from experts as appropriate.

For an innovation city considering the implementation of a brand new IC for the first time, it will be from the viewpoint of that city with advice from experts as appropriate.

The example given in the table is the result of the worked example used here to illustrate a transferability exercise in which the city of Worcester (UK), in the role of adopter city, has assessed the transferability of the Nantes Busway as currently implemented in Nantes, the donor city.

From concept to reality
Assessment and conclusions

step 1 → step 2 → step 3 → step 4 → step 5 → step 6

Step 5. Assess the likely ease or difficulty in achieving the indicated level of importance of each characteristic in the adopter city

This is a subjective assessment informed by the ease or difficulty experienced in implementing the innovative concept in the donor city but modified by potential beneficial changes that could be made to ease implementation in the adopter city.

The assessment should be made using the scale from +2 to -2 as follows:

+2	strong support for transferability
+1	modest support for transferability
0	neutral
-1	modest constraint for transferability
-2	strong constraint for transferability

This assessment may also result in changed levels of importance if the adopter city perceives particular characteristics as more or less important than indicated by the donor city.

Step 6. Consider the set of values across the characteristics and assess the likely potential for transferability and any conditions that may be required

This final step is to draw conclusions about the potential for transferability through consideration of the factors identified and the assessment values ascribed to each.

- If there are one or more strong constraints to transferability, it is likely that the innovative concept is not generally transferable, unless the constraining conditions can be overcome in the new area or city.

- If there are no strong constraints, but one or two modest constraints, it is likely to be difficult to transfer the innovative concept, unless the constraining conditions can be properly addressed.

- If there are no constraints at all, it is likely that the innovative concept could be successfully transferred, particularly where supporting factors can be put in place.

For the example of the bus (BHLS) scheme in Worcester illustrated in the full transferability assessment table it can be seen that the main factors that support implementation, i.e. impacts and those components and characteristics with high importance and +2 marks, are:

- very positive impacts and measures of success, particularly cost benefits, which suggest that a BHLS system should substantially cover its costs;

- a high degree of compatibility with prevailing transport strategies and policies, including pollution reduction, public transport use, accessibility and sustainability;

- services offered, particularly improvements in quality, frequency (and reliability), information and accessibility;

- target population: is very wide and covers the travelling public in general, including visitors, residents, commuters, shoppers and those travelling to school or to leisure facilities etc. Also businesses who will benefit fom improved access to the city centre;

- geographic area: the schemes tackle the key corridors into the city centre;

- finances: in particular, the potential for higher revenues from increased patronage;

- technical facilities: including the provision of real time information for passengers;

- demographic issues: the aging society, disabled and push chair users will all be helped by improved accessibility measures to Worcester's 'gold standard'.

When considering constraints for transferability i.e. impacts or those components and characteristics with low and -2 marks, the main issues are seen to be:

- stakeholder involvement: particularly the difficulty to include everyone's wishes in the project. BHLS is believed to be generally very acceptable except to a few affected user groups, i.e. residents and businesses on the corridors who fear they will lose road capacity, roadside parking opportunities and custom. This makes political support vulnerable and extensive public consultation is needed to win them over. The need to involve national government for funding is also seen as a negative point;

- also noted as potential barriers are the need to provide bus lanes together with bus location and information systems and the consequent increased administrative requirement. These are seen as negatives (-1) when compared with conventional bus schemes, as is the additional need for publicity to overcome problems with public and political acceptance.

It can be concluded that there are a number of barriers to the implementation of BHLS systems in Worcester, but none appear to be insurmountable, and given the scale of the benefits it should be possible to devise mitigating strategies and a public awareness campaign to overcome the objections and allow implementation to proceed.

Further information & contacts

The methodology reported here builds upon earlier transferability studies investigated in several European projects, notably **MOBISERVICES** (2002), **PRISCILLA** (2002), **METEOR** (2005), **NICHES** (2006) and **CIVITAS GUARD** (2010).

The methodology and its application in NICHES+ is more fully reported in Deliverable 3.2. **"Report on implementation issues and transferability of innovative concepts"**, NICHES+ 2009.

Advice on identifying and involving users and stakeholders is provided in NICHES+ deliverable D2.2 **'Users and implementers of innovative concepts'**, NICHES+ 2009.

Further examples of transferability exercises are provided in **the Implementation Scenarios of the NICHES+ Champion Cities**, NICHES+ 2011

Glossary of terms

BCR	Benefit : Cost Ratio
IC	Innovative Concept
KCI	Key Performance Indicator
MCA	Multi-Criteria Analysis

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The mission of NICHES+ is

to build on the success of the first NICHES project by stimulating a wide debate on innovative urban transport and mobility between relevant stakeholders from different sectors and disciplines across the EU and accession countries, in order to promote the most promising new urban transport concepts, initiatives and projects and transfer them from their current "niche" position to a mainstream urban transport application.

This publication is part of a series of publications presenting the NICHES+ outcomes.

Photos on title page

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www.niches-transport.org
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Transferability assessment of BHLS from Nantes to Worcester

Part 1.

Innovative Concept (IC)	Infrastructure for innovative bus systems	
Perspective and context	Implementation of BHLS systems in Worcester based on the example of the Nantes Busway	
Up-Scaling required ?	No up-scaling required for Worcester compared to Nantes. Both systems work on corridors of similar length with broadly similar numbers of passengers, buses and stops.	
Impacts and measures of success	Impacts on efficiency (capacity, journey time, congestion etc.)	Worcester is a historic city so can't provide segregated bus lanes everywhere as in Nantes. But BHLS buses use bus lanes where possible and receive priority at signals to avoid congested traffic, and provide more reliable journey times. Capacity can be similar to a tram.
	Impacts on Safety	Safer than a conventional bus courtesy of separation. Improved safety is also expected for cyclists and pedestrians.
	Impacts on environment (emissions, noise, visual intrusion etc.)	Environmental impacts are reduced as the vehicles have modern, low emission engines and there is less stationery traffic. Reduced traffic is also expected as a result of drivers leaving their cars in P&R sites where they are provided.
	Accessibility	Buses can dock more precisely, and with raised curbs can provide level floor access e.g. for wheel- and push-chairs. The route also can be flexible, as the vehicles are not track bounded.
	Vehicle occupancy	Expected to increase due to increased reliability and comfort and increased availability of P&R facilities, which should also help mode shift away from cars.
	Passenger waiting statistics	Buses run more reliably to schedules. Waiting times are more predictable.
	Trip statistics	Expected figures are available from a modelling exercise. Usage will be monitored to confirm benefits.
	Benefit : Cost Ratio (BCR) value	Forecasts are available from a modelling exercise and show that a BCR of at least 2:1 should be achieved. The figure will be confirmed after implementation.
	Multi-Criteria Analysis (MCA) results	MCA analysis has been undertaken and shows that BHLS perform well against a range of criteria.

Part 2.

Components	Characteristics of the components	Importance	Ease of achieving that level (support +2 to -2 constraint for transferability)	Comments, including contribution to successful implementation
Strategies and policies	Pollution reduction policy	high	+2	Major objective. Alternative to the car to promote mode shift and reduced traffic.
	Public transport policy	high	+2	Major objective. Provides attractive alternative to the private car with reliable service.
	Accessibility policy	high	+2	Major objective to provide accessible infrastructure to 'gold standard' to complement the BHLS system.
	Traffic management policy	high	0	Major objective. Bus lanes and priority at signals ensure BHLS offers a reliable service, but traffic needs managing to mitigate the loss of capacity.
	Land use policy	medium	+1	An objective to be addressed using P&R as a complementary concept in some cases.
	Sustainability	high	+2	Major objective. BHLS provides an alternative to car usage. And is a potentially sustainable mode of transport.
	Innovation policy	medium	+1	WCC are keen to be seen as innovators.
Services offered	High quality service	high	+2	High quality vehicles
	Frequent service	high	+2	Frequency and reliability of the service makes the system successful.
	Information services	high	+2	Real time information at stops and terminals
	Improved accessibility	high	+2	To WCC's 'gold standard' Including bus shelters, information systems, co-located pedestrian crossings, raised curbs and lighting.
	Parking	high	+1	P&R sites on some corridors to capture car drivers at the outer ends of the corridor, but bus lanes may take space from existing parking places.
Target population	General public	high	+2	The corridors are aimed particularly at visitors arriving by car, and in some cases to attract them to use P&R facilities and so help relieve congestion in the city. Visitors will include residents, commuters, shoppers and those travelling to school or to leisure facilities etc.
	Businesses	low	+1	Can expect to benefit from improved accessibility
	Former PT users	medium	+1	It is anticipated that by providing improved PT services some users lost to PT in recent years may be recovered.
Geographical area covered	Corridors	high	+2	The planned routes connect the suburbs with the city centre. Some tangential links are provided to include key sites, e.g. hospitals.
Finances	Capital costs of design, planning, implementation	medium	-1	Higher than a conventional bus system, but lower than a tram line.
	Running costs	medium	0	Not relevant, similar to any bus operation
	Revenues	medium	+2	Probably higher due to higher patronage than a conventional bus system
	Whole life costs	medium	0	Similar to any bus system
Human resources	Staff numbers required	low	0	Depends on the specific project, but there is not too much difference comparing to a conventional bus system.
	Skills and training required	low	0	Not relevant, similar to any bus operation
	Administrative support	medium	-1	Slightly higher to accommodate AVL and systems for bus priority and information at stops

Part 2. (next)

Components	Characteristics of the components	Importance	Ease of achieving that level (support +2 to -2 constraint for transferability)	Comments, including contribution to successful implementation
Stakeholders involvement	Users	high	-2	Difficult to include everyone's wishes in a project
	Operators involved	high	+1	Bus operators are generally highly interested in such a concept.
	Businesses affected	medium	-1	Improved transport conditions help businesses as well, although those on the corridor fear that bus lanes may remove some parking opportunities and they will lose custom as a result.
	Government	high	-1	Crucial: in terms of financing, permissions, licenses
	Taxi and PT operators, driver's unions	medium	0	Usually not relevant, but should be dealt with at conception phase
Legal or contractual requirements	Partnership agreements required	medium	0	Possibly between the County Council and the selected bus operating company to ensure a high standard is provided by both parties in maintaining the infrastructure and the buses.
	Licenses required	medium	0	A Traffic Regulation Order is required to give formal approval for providing the infrastructure ie bus lanes and priority at traffic signals. Some Compulsory Purchase Orders may be needed to provide space for necessary infrastructure.
	Contracts	medium	0	A contract is required between the County Council and the selected bus operating company to provide services on commercially viable routes, i.e. not requiring subsidy. The contract may also cover the requirements of a quality partnership agreement. Described above
Organisational or institutional aspects	Administrative structure	medium	-1	Better structured than a conventional bus system
	Procedures	medium	0	Not relevant
Technical requirements	Equipment and Tools	high	0	Higher (requires bus lanes together with AVL and systems for providing priority at traffic signals and real time bus information at stops etc.) but also higher efficiency than a normal bus system.
	Information/data	high	+2	Crucial to attract the passengers
	Ticketing /payment	medium	0	Integrated ticketing preferred
	Software	medium	0	Is required for the bus location and information system.
	Communications	medium	0	As above: between the buses and the control centre, and between the control centre and the bus stops/terminals as necessary to provide bus priority at signals and bus stop information services.
	Infrastructure	medium	-1	Buses, bus lanes, AVL equipment for location, priority at signals and bus information systems.
Implementation and management aspects	Security	low	0	Not relevant
Awareness and Communication	Publicity and public relations	medium	-1	BHLS is thought to be generally very acceptable except to a few affected user groups, i.e. residents and businesses on the corridors. Extensive public consultation is needed to win them over.
	Citizens involvement	medium	0	Special 'Consultation Officer' provided by Worcestershire County Council to identify stakeholders and prepare a campaign to inform and win acceptance.
	User communication	medium	0	Publicity material produced and disseminated to clarify advantages and answer anticipated issues, and meetings held with public and stakeholders.
Demographic issues	Male/female involvement	low	0	Not relevant
	Age distribution	medium	+2	Aging society, disabled and push chair users will be helped by improved accessibility measures to 'gold standard'.
Wider issues	Culture / lifestyle	low	+1	High quality buses should help improve public acceptability. Systems may also be capable of changing, transport behaviour.
	Climate	low	0	Not relevant
	Mobility patterns	medium	+1	Corridors aim to serve the main approaches and movements in and out of the city.
	Political	high	-1	Political support is necessary for a scheme to proceed. There is some risk here associated especially with public acceptance (see below).
	Topology	medium	0	Not relevant
	Public acceptance	high	0	Expected to be high generally but problems caused by particular groups ie residents, shop owners etc who fear that bus lanes and priority will impede traffic and lose them custom.
	Technology risk	medium	+1	Low. Technology proven and available
	Security	medium	+1	No special problems. Similar to any bus system
	Safety	medium	+1	No special problems for users, similar to other bus schemes, though users will experience improved accessibility to 'gold standard'. Should be safer for pedestrians and cyclists.