

English version

Transportation - Logistics and services - Public passenger
transport - Service quality definition, targeting and measurement

Transport - Logistique et services - Transport public de
voyageurs - Définition de la qualité de service, objectifs et
mesures

Transport - Logistik und Dienstleistungen - Öffentlicher
Personenverkehr - Definition, Festlegung von
Leistungszielen und Messung der Servicequalität

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document EN 13816 has been prepared by CEN/TC 320 "Transportation – Logistics and services", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2002, and conflicting national standards shall be withdrawn at the latest by October 2002.

Certain parts have been prepared in corporation with experts from the QUATTRO project, supported by the European Union's Fourth Framework Transport RTD programme.

The annexes A, B and C are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The main purpose of the standard is to promote a quality approach to public transport operations and focus interest on customers' needs and expectations, by specifying procedures most likely to:

- draw the attention of the responsible parties to matters to be considered;
- lead to relevant and well-founded decisions particularly with regard to the allocation of responsibilities;
- enable customers, and others, to compare service quality claims from alternative suppliers, reliably;
- contribute to the implementation of a process of continuous improvement.

The requirements of the standard are such that entities, whether large or small, can benefit from its adoption and use.

Adoption of this European Standard may be appropriate for:

- 1) *Public Passenger Transport services for which a single operator carries sole responsibility for all major quality criteria, or two or more parties share responsibilities, in accordance with an agreement*

The requirements outlined in chapter 4 will permit full compliance with the standard. Compliance will assist service providers in the provision of public passenger transport that will more closely align with the expectations of the customers. To this end, provisions are made for using elements from a detailed definition of quality in public passenger transport presented as a list of quality criteria (annex A).

The benefits of complying with the standard will be an improved ability to allocate the resources available to the tasks most likely to produce added customer satisfaction and revenue to the service providers.

The standard includes recommendations for the preferred form and contents of agreements regarding quality between parties sharing responsibility for a public passenger transport (PPT) system, and invitations to tender. The recommendations include a guideline for allocation of responsibilities for the relevant quality parameters.

The standard also includes recommendations for the measurement of service quality.

- 2) *Authorities in a tendering/contracting situation, requiring that the service be provided in accordance with this standard*

In a tendering situation additional benefits are derived from applying this standard:

The bidder will be certain that all quality criteria not specifically mentioned in the tender document will not be his responsibility, and respect national and European legislation, and he need not, therefore, add a contingency allowance to his bid in order to cover implicit responsibilities which may be a matter of national or local tradition.

The bidder will be able to understand what is required of him more readily, as a result of the use of standard terms used in the list of quality criteria (Annex A) and defined in the glossary (Annex B).

It is recommended that a tender document, which requires that the service be provided in accordance with this standard, also includes requirements for the level of quality.

1 Scope

This European Standard specifies the requirement to define, target and measure quality of service in public passenger transport (PPT), and provides guidance for the selection of related measurement methods.

It is intended to be used by service providers in the presentation and monitoring of their services but is also recommended for use by authorities and agencies responsible for the procurement of PPT services in the preparation of invitations to tender.

Its use promotes the translation of customer expectations and perceptions of quality into viable, measurable, and manageable quality parameters.

It is recognized that a single individual or company, or two or more parties sharing the responsibility for the provision of a PPT service in co-operation (e.g. authority and operator) may, in practice, seek to comply with the standard. In the latter situation, it is strongly recommended that the relationship between the parties be governed by a formal agreement (5.2).

It is important to note that it is the service, not the service provider, which is in compliance with the standard.

Annex A sets out the comprehensive list of quality criteria.

Annex B provides a glossary of terms.

Annex C deals with aspects of performance measurement.

The standard is intended to be applicable to PPT services, as defined in 2.1 but need not exclude other transport services (e.g. charter and taxi systems).

2 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

2.1

public passenger transport

services which have the following characteristics:

- are open to all, whether travelling singly or in groups;
- are publicly advertised;
- have fixed times or frequencies, and periods of operation;
- have fixed routes and stopping places, or defined origins and destinations, or a defined operating area;
- are provided on a continuing basis, and
- have a published fare.

It is not limited by reference to:

- mode of transport;
- vehicle and infrastructure ownership;
- journey length;
- any necessity for pre-booking, or

- the method of payment for travel;
- legal status of the service providers

2.2

service provider

entity providing a public passenger transport service

NOTE This may not imply an entity in the legal sense. The entity providing the service may be composed of a grouping of any of individuals, companies, corporations, and authorities co-operating in the provision of the service.

2.3

service quality definition

set of quality criteria and appropriate measures for which the service provider (entity claiming compliance) is responsible

3 Methodology

3.1 The quality loop

This standard is based on the concept of the service quality loop. The general principles of the loop are set out in this chapter and illustrated in Figure 1, whereas the requirements and recommendations of the standard, based on the principle of the quality loop, are set out in clauses 4 and 5.

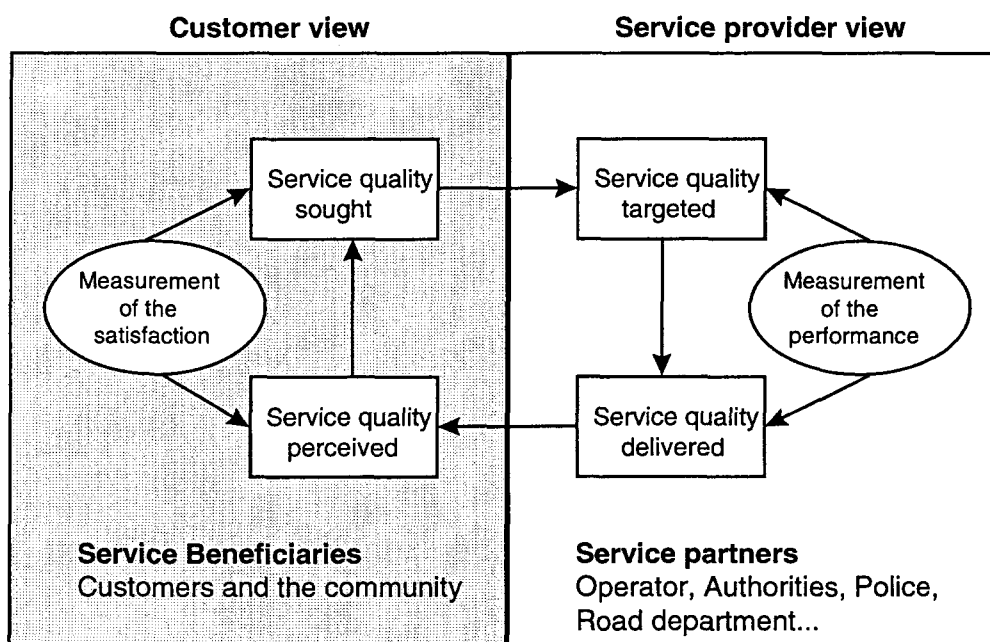


Figure 1 – Service quality loop

The relationship between the four distinct views of the quality of a public passenger transport service (see annex B for definitions) is of the utmost importance and failure to recognize the differences that can exist between them, when applied to the same service, may significantly impede the efforts of the operator to achieve parity between the service quality actually delivered and that sought by service users.

The elements and links of the quality loop are explained below.

3.1.1 Service quality sought

This is the level of quality, which explicitly or implicitly is required by the customer. The level of quality can be considered as the sum of a number of weighted quality criteria. The relative weight of these criteria can be assessed by qualitative analysis.

3.1.2 Service quality targeted

This is the level of quality, which the service provider aims to provide for the customers. It is influenced by the level of quality sought by the customers, external and internal pressures, budgetary and technical constraints and competitors' performance. When setting targets for the service to be provided, it is necessary for the following factors to be addressed:

- a brief statement of the service standard, e.g.:
 - we intend our passengers to travel on trains which are on schedule (meaning a maximum delay of 3 minutes)
 - we intend to provide a quick response to comments and complaints (meaning within 10 working days)
- a level of achievement, which is a statement or assessment of the percentage of customers benefiting from the standard service e.g.:
 - 98 % of our passengers find that their trains are on schedule
 - 95 % of our passengers find the escalator, which they want to use, in good working order
- a threshold of unacceptable performance. In each case, when the threshold is crossed, the service is considered not to have been adequately provided, immediate corrective action shall be taken, including possible alternative service, and customers may be compensated.

3.1.3 Service quality delivered

This is the level of quality achieved on a day-to-day basis. Delivered quality is measured from the customer viewpoint. It is not simply a technical evaluation showing that a process has been accomplished (thus, punctuality is about what is experienced by the customers throughout the journey, not just the amount of delay, for instance: in a train system scheduled to run at 10 minute intervals, if the first train is 10 min late, measurement will show that all trains run 10 minutes late. However, only the passengers on the first train will experience the delay, while passengers on following trains will experience normal journey times. NB: In practice, this may not always prove to be the case, especially where junctions are involved).

Delivered quality can be measured by using statistical and observation matrices (direct performance measures, see annex C).

3.1.4 Service quality perceived

This is the level of quality perceived by the customer. Customer perception of the quality delivered depends on their personal experience of the service or associated services, on the information they receive about the service - from the provider or from other sources - or the personal environment.

3.1.5 Service quality differences may be noted as follows:

The difference between "quality sought" and "quality targeted" expresses the degree to which the service providers are able to direct their efforts towards the areas which are important to the customers.

The difference between "quality targeted" and "quality delivered" is a measure of the efficiency of service providers in achieving their targets.

Perceived quality sometimes bears little resemblance to delivered quality. Perceived quality can be measured through surveys (soft measures). The gap between delivered quality and perceived quality is a function of the customer's knowledge about the service delivered and of personal or reported experiences with the service and/or personal background and environment.

The difference between "quality sought" and "quality perceived" may be taken as the degree of customer satisfaction.

3.1.6 Application of the principles of the quality loop to any quality management scheme involves:

- defining or assessing explicit and implicit expectations of the customer;
- specifying a viable and deliverable service, taking these expectations into account, (for instance specifying a reference service, a level of achievement and a threshold of unacceptable performance), and, when appropriate, letting customers know about it;
- producing a service that complies with the specifications (including measurement of performance and corrective action);
- communicating the results to the customers, where appropriate;
- measuring customer satisfaction;
- analyzing the results and taking appropriate corrective action.

3.2 Quality criteria

The overall quality of public passenger transport contains a large number of criteria. The criteria represent the customer view of the service provided, and in this standard they have been divided into 8 categories.

Category 1 and 2 describe the PPT offer in more general terms, category 3, 4, 5, 6, and 7 provide a more detailed description of the quality of the service, and category 8 describes the environmental impact on the community as a whole:

- 1) availability: extent of the service offered in terms of geography, time, frequency and transport mode
- 2) accessibility: access to the PPT system including interface with other transport modes
- 3) information: systematic provision of knowledge about a PPT system to assist the planning and execution of journeys
- 4) time: aspects of time relevant to the planning and execution of journeys
- 5) customer care: service elements introduced to effect the closest practicable match between the standard service and the requirements of any individual customer
- 6) comfort: service elements introduced for the purpose of making PPT journeys relaxing and leasurable
- 7) security: sense of personal protection experienced by customers, derived from the actual measures implemented and from activity designed to ensure that customers are aware of those measures
- 8) environmental impact: effect on the environment resulting from the provision of a PPT service

4 Requirements for service quality

4.1 Compliance

The service provider shall ensure that the requirements of 4.2, 4.3 and 4.4 are met.

4.2 Quality management

Quality management shall be adopted by service partners (authorities, operators and/or others), which ensures that the following steps are taken to an appropriate degree, and at an appropriate frequency, considering the scale and complexity of the PPT operation.

Each item from the list below shall be considered, whether in outline or in detail and recorded in such a way that it can be reviewed.

- 1) The explicit and implicit expectations of the customer regarding the quality of the PPT service are identified.
- 2) Legal, political, financial, technical and other constraints are taken into account.
- 3) Existing quality levels and areas for potential improvement are identified.
- 4) Targets are set with due consideration of items 1, 2, 3 above and 5 below. This involves translation of data from these items into measurable quality criteria, and:
 - selection of criteria from the list of quality criteria (see annex A), considering the number of passengers affected
 - specification of the performance level to be targeted for each of above mentioned criteria, considering the number of passengers affected. This involves (see 3.1.2):
 - statement of service standard
 - level of achievement, expressed, where appropriate, as a ratio of passengers affected
 - threshold of unacceptability
 - redress, (if contracted), in case of failure to meet threshold
- 5) Performance is measured. This involves:
 - selection of measurement methods (see 5.3 and annex C)
 - decision about frequency of measurement
 - decision about methods for computation of results, and appropriate validation
 - documentation of results
- 6) Corrective action is taken - i.e. improvement of performance or revision of targets. This involves:
 - corrective action in the case performance targets are not met
 - corrective action in the case of unacceptable performance
 - appropriate communication
- 7) The customer perception of quality delivered is assessed in order to establish a basis for item 8 below.

8) Appropriate action plans are prepared and implemented to reduce differences between:

- delivered and perceived quality
- sought and perceived quality

4.3 Service quality definition

In defining/presenting the quality of the service(s) offered, the service provider shall select criteria from the list provided in annex A to prepare a service quality definition for the particular PPT system. Of that list, all level 1 criteria shall be included unless not relevant to the service provided. Where level 1 criteria are thus excluded, a written explanation shall be included in the service quality definition. In addition, the service provider should select additional criteria from level 2 and 3 in accordance with his needs and preferences for the particular service being defined.

Criteria from annex A may be clustered into one criterion, subdivided and/or renamed. In all cases reference to annex A decimal numbers shall be supplied. Additional criteria may be introduced, and shall be provided with a decimal number to prove their group affiliation.

4.4 Service quality measurement

In measuring the quality of service performance for each criterion, appropriate methods shall be used. In annex C some relevant methods are described, and some examples of their use are given.

Alternative methods may be used, provided these produce equivalent results. Where an alternative method is used, a summary of its parameters shall be provided with any statement/claim of performance.

5 Recommendations

5.1 Commitment between participating parties

It is strongly recommended, where two or more parties share the responsibility for the provision of a PPT service in cooperation (e.g. authority and operator), that formal agreement be entered into to ensure that allocation of responsibilities and determination of the quality management tools to be applied, is adequately addressed.

5.2 Allocation of responsibilities

In a situation where the provision of an effective PPT service depends upon the participation and co-operation of two or more bodies or partners, it is essential that adequate attention be paid to ensuring that all partners are able to identify, and understand fully, the quality criteria for which they are responsible. It is also essential that each is aware of the responsibilities of the other participants. A process to allocate such responsibilities is a significant objective of these recommendations and should include

- a joint quality management system, or
- separate quality management systems should be adopted.

In both cases it is strongly recommended that an agreement between the parties be set up, containing the following elements, and allocating responsibility for each:

1) Common objectives for the partners in the PPT system

2) Customer expectations

2.1) Selection of research methods

2.2) Research

- 2.3) Translation of research results into performance criteria
- 2.4) Communication with market as appropriate

3) Setting of targets

- 3.1) Identification of existing quality level and opportunities for change
- 3.2) Analysis of legal, political, financial, technical and other constraints
- 3.3) Decision as to the number, and selection of quality criteria to be included
- 3.4) Setting of targets: Statements, tolerances and unacceptability thresholds
- 3.5) Selection of method of measurement, frequency, computation and validation
- 3.6) Dissemination of information about targets

4) Delivered quality

- 4.1) Responsibility for the delivery of each criterion, selected from Annex A, relevant to the provision of the service
- 4.2) Performance with respect to each criterion
- 4.3) Performance measurement
- 4.4) Corrective action

5) Customer perception of quality

- 5.1) Communication of delivered quality and possible corrective action
- 5.2) Selection of methods of measurement
- 5.3) Measurement of perceived quality

5.3 Other quality management tools

- **self-assessment:** various methods including the EFQM model used in assessment towards and for the European Quality Award
- **implementing continuous improvement programmes**
- **benchmarking:** as a method of sharing knowledge and experience of "best practices" to bring about improvement through identification of targets
- **standardization and/or certification:** tools to be used for improved quality management and service definition
- **quality partnerships:** through co-operation between authorities and operators in order to improve service co-operation and, in consequence, service quality
- **guarantees of service:** by commitments of service providers (authorities and operators) towards customers

Annex A (informative)

Quality criteria

A.1 Introduction

The use of Figure A.1 is a requirement for preparing a service quality definition (see 2.3 and 4.3) and that is also a requirement. For definitions consult annex B.

Figure A.1 contains a detailed list of the quality criteria of a PPT service as viewed by the customer. Users of the list should be aware that in practice PPT customers often do not perceive quality in such detail as offered in the list.

The means available to influence customers' perception of the quality criteria listed vary between transport modes, environments, and service providers. It is recommended that users of the list provide their own list of the means available to them.

The list covers all customer segments including e.g. mobility impaired customers.

A.2 Quality criteria

Level 1	Level 2	Level 3
1. Availability	1.1 Modes	
	1.2 Network	1.2.1 distance to b/a-point 1.2.2 need for transfers 1.2.3 area covered
	1.3 Operation	1.3.1 operating hours 1.3.2 frequency 1.3.3 vehicle load factor
	1.4 Suitability	
	1.5 Dependability	
2. Accessibility	2.1 External interface	2.1.1 to pedestrians 2.1.2 to cyclists 2.1.3 to taxi users 2.1.4 to private car users
	2.2 Internal interface	2.2.1 entrances/exits 2.2.2 internal movement 2.2.3 transfer to other PPT modes
	2.3 Ticketing availability	2.3.1 acquisition on network 2.3.2 acquisition off network 2.3.3 validation

3. Information	3.1 General Information	3.1.1 about availability
		3.1.2 about accessibility
		3.1.3 about sources of information
		3.1.4 about travelling time
		3.1.5 about customer care
		3.1.6 about comfort
		3.1.7 about security
		3.1.8 about environmental impact
	3.2 Travel information normal conditions	3.2.1 street directions
		3.2.2 b/a-point identification
		3.2.3 vehicle direction signs
		3.2.4 about route
		3.2.5 about time
		3.2.6 about fare
		3.2.7 about type of ticket
	3.3 Travel information abnormal conditions	3.3.1 about current/forecast network status
		3.3.2 about alternatives available
		3.3.3 about refund/redress
		3.3.4 about suggestions & complaints
		3.3.5 about lost property
4. Time	4.1 Length of trip time	4.1.1 trip planning
		4.1.2 access/egress
		4.1.3 at b/a-points and transfer points
		4.1.4 in vehicle
	4.2 Adherence to schedule	4.2.1 punctuality
		4.2.2 regularity

5. Customer care	5.1 Commitment	5.1.1 customer orientation 5.1.2 innovation and initiative
	5.2 Customer interface	5.2.1 enquiries 5.2.2 complaints 5.2.3 redress
	5.3 Staff	5.3.1 availability 5.3.2 commercial attitude 5.3.3 skills 5.3.4 appearance
	5.4 Assistance	5.4.1 at service interruptions 5.4.2 for customers needing help
	5.5 Ticketing options	5.5.1 flexibility 5.5.2 concessionary tariffs 5.5.3 through ticketing 5.5.4 payment options 5.5.5 consistent price calculations

6. Comfort	6.1 Useability of passenger facilities	6.1.1 at b/a points 6.1.2 on vehicles
	6.2 Seating and personal space	6.2.1 in vehicle 6.2.2 at b/a-points
	6.3 Ride comfort	6.3.1 driving 6.3.2 starting/stopping 6.3.3 external factors
	6.4 Ambient conditions	6.4.1 atmosphere 6.4.2 weather protection 6.4.3 cleanliness 6.4.4 brightness 6.4.5 congestion 6.4.6 noise 6.4.7 other undesired activity
	6.5 Complementary facilities	6.5.1 toilets/washing 6.5.2 luggage & other objects 6.5.3 communication 6.5.4 refreshments 6.5.5 commercial services 6.5.6 entertainment
	6.6 Ergonomy	6.6.1 ease of movement 6.6.2 furniture design
7. Security	7.1 Freedom from crime	7.1.1 preventative design 7.1.2 lighting 7.1.3 visible monitoring 7.1.4 staff/police presence 7.1.5 identified help points
	7.2 Freedom from accident	7.2.1 presence/visibility of supports, e.g. handrails 7.2.2 avoidance/visibility of hazards 7.2.3 active safeguarding by staff
	7.3 Emergency management	7.3.1 facilities and plans

8. Environmental impact	8.1 Pollution	8.1.1 exhaust
		8.1.2 noise
		8.1.3 visual pollution
		8.1.4 vibration
		8.1.5 dust & dirt
		8.1.6 odour
		8.1.7 waste
		8.1.8 electromagnetic interference
	8.2 Natural resources	8.2.1 energy
		8.2.2 space
	8.3 Infrastructure	8.3.1 effect of vibration
		8.3.2 wear on road/rail etc.
		8.3.3 demands on available resources
		8.3.4 disruption by other activities

Table A.1 — Quality criteria

Annex B (informative)

Glossary of Terms pertinent to Public Passenger Transport

B.1 Introduction

This glossary contains terms specific to Public passenger transport which are used in this standard "Transportation – Logistics and services – Public passenger transport - Service Quality Definition, Targeting and Measurement".

The terms were identified and defined in English, taking into account a wide variety of published glossaries in the same general subject area. Where appropriate, terms and definitions used in these other publications have been adopted although in some instances the English words used in the definition may have been adapted to reflect the English language as it is used and understood throughout Europe.

B.2 Structure

The terms and definitions in this glossary are arranged in strict alphabetical order:

B.3 Terms and definitions

B.3.1

access time

time required to enter the network from point of trip origin

B.3.2

accessibility

access to the PPT system including interface with other PPT modes

B.3.3

availability

extent of the service offered, in terms of geography, time frequency and transport mode

B.3.4

B/A point

(boarding/alighting point)

dedicated area, either on or separate from the main route, where customers wait for, board, alight, and transfer between, PPT units. B/A points may be uni-modal or multi-modal

B.3.5

B/A point identification

means of signaling the location and identity of a B/A point

B.3.6

B/A point time

time necessarily spent on the network, outside of PPT units, in order to accomplish the planned trip

B.3.7

benchmarking

systematic comparison of the systems and performance of a PPT service provider in relation to that of other providers, not necessarily on a modal basis, and to other service industries where appropriate

B.3.8

capacity

extent to which a PPT unit can accommodate all passengers wanting to travel at a given time in accordance with their expectations (such expectations may be limited by regulation)

B.3.9

charter service

transport, using PPT units, for a group of customers who, pursuant of a common purpose and under a single contract, have acquired the exclusive use of a means of transport to travel together to a common itinerary

B.3.10

comfort

service elements, introduced for the purpose of making PPT journeys more relaxing and pleasurable

B.3.11

connection time (actual or scheduled)

time to effect a transfer between routes or modes

B.3.12

customer

person interested in satisfying a personal need for mobility by use of a PPT service, from the moment of journey planning to the cessation of contract with the service provider (see passenger)

B.3.13

customer (potential)

a person with an individual need for mobility

B.3.14

customer attribute

quality of service or material object recognized as appropriate to an individual

B.3.15

customer care

service elements introduced to effect the closest practicable match between the standard service and the requirements of any individual customer

B.3.16

customer charter

published document identifying the service provider and detailing his commitment to the customer including matters of re-dress in the event of service deficiency

B.3.17

customer satisfaction survey

survey designed to assess the degree to which a customer believes his/her requirements to have been met

B.3.18

dependability

degree to which the customer may be certain that services will be provided as published

B.3.19

direct performance measure

method of monitoring the actual performance of the service from operational records or physical observation

B.3.20

early

period in advance of the scheduled/published time at which a PPT journey is recorded as operating

B.3.21

egress time

time required to exit the system and reach trip destination

B.3.22

environmental (impact)

effect on the total environment resulting from the provision of a PPT service

B.3.23

facility (PPT)

opportunity, resource, premise or equipment provided principally for PPT to make the use of PPT services more readily achievable

B.3.24

frequency

number of vehicle journeys to a common destination provided at a given point during a specified period

B.3.25

headway

time interval between two PPT units serving a section of route/s between at least two B/A points on a common basis

B.3.26

information

systematic provision of knowledge about a PPT system to assist the planning and execution of journeys

B.3.27

journey

scheduled movement of a vehicle along a single route (see also B.3.67)

B.3.28

late

period behind the scheduled/published time at which a PPT journey is recorded as operating

B.3.29

layover time

time built into a schedule between a vehicle's arrival at the end of a route and its departure for the next journey

B.3.30

mobility impaired

person having physical or mental impairment or being in some way encumbered such that their mobility is restricted

B.3.31

multi-modal

issues or activities which involve or affect more than one mode of transport, including transport connections, choices, co-operation and co-ordination of various modes

B.3.32

mystery shopper survey

method of measurement of service quality based on objective observations carried out independently by trained survey teams referencing specific, pre-determined criteria, whilst acting as if they were genuine customers travelling on the system

B.3.33

network

range and extent of the PPT services on offer by reference to time, geography, and mode

B.3.34

operator

service provider or element of service provider holding the "operators license"

B.3.35

operating hours

daily hours during which services are available

B.3.36

operating schedule

scope and density of vehicle journeys planned

B.3.37

passenger

customer satisfying a personal need for mobility by the use of PPT (see customer)

B.3.38

public passenger transport (public transport) (PPT)

services which, in general, fulfil the characteristics and scope listed in 2.1 of the standard

B.3.39

punctuality (of services scheduled by time)

degree to which vehicles adhere to published schedules

B.3.40

quality partnership

formal agreement, not necessarily contractual, between parties within the public and private sectors to co-operate in the promotion and provision of PPT services

B.3.41

regularity (of services scheduled by interval)

degree to which vehicles adhere to published schedules

B.3.42

(passenger) ride

travel by a passenger in a single vehicle without the need to alight or transfer

B.3.43

route

PPT unit journey inclusive of all scheduled stops and characterized by pre-determined start and finish B/A points

B.3.44

security

sense of personal protection experienced by customers, derived from the actual measures implemented and from activity designed to ensure that customers are aware of those measures

B.3.45

service information

intentional provision of knowledge about services as planned

B.3.46

service-quality (delivered)

level that is achieved against objectively measurable criteria

B.3.47

service-quality (perceived)

customer impression of the delivered service quality

B.3.48

service-quality (sought)

level required by the customer implicitly or explicitly

B.3.49

service-quality (targeted)

level that the service provider plans to achieve

B.3.50

suitability

degree to which the services offered fit the transport needs of the individual customer

B.3.51

(PPT) system

totality of vehicles, facilities, operation and management

B.3.52

(B/A) terminus

area containing one or more B/A points at least one of which is the end of a route

B.3.53

ticketing (outside network)

possibility of obtaining the authority to travel at other locations

B.3.54

ticketing (within network)

possibility of obtaining the authority of travel at B/A points or on vehicles

B.3.55

ticketing

possibility of obtaining the authority to travel

B.3.56

time

aspects of time relevant to the planning and execution of journeys

B.3.57

timetable

published statement of vehicle journeys offered by time of operation and route

B.3.58

transfer

passenger change between PPT units, irrespective of mode

B.3.59

travel information

intentional provision of knowledge regarding current service performance, available alternatives and to assist with abnormal incidents

B.3.60

travelling time

time taken to accomplish a trip

B.3.61

(passenger) trip

overall travel by a passenger, from origin to destination, inclusive of all rides, transfers and delays

B.3.62

(PPT) vehicle

single vehicle or group of vehicles linked together and operated simultaneously, used to provide a number of passengers with a common ride

B.3.63

vehicle dead/light mileage

mileage out of service PPT unit journey

B.3.64

vehicle direction signs

travel information provided on vehicles, regarding route identification, destination and present location

B.3.65

vehicle dwell-time/dwell-time

scheduled time a vehicle is allowed to discharge and take on passengers at a B/A point, including opening and closing doors

B.3.66

vehicle journey running-time

time taken to complete a specified PPT unit journey

B.3.67

vehicle journey

scheduled movement of a vehicle along a single route (see also B2.27)

B.3.68

vehicle load factor

ratio of passengers actually carried as against the total capacity of a vehicle

Annex C (informative)

Guidance Notes on Performance and Satisfaction Measurement

C.1 Introduction

C.1.1 These notes aim to provide guidance on the main performance and satisfaction measurement methods in common use in public passenger transport; these include particularly:

- for satisfaction measurements: Customer Satisfaction Surveys (CSS)
- for performance measurements: Mystery Shopping Surveys (MSS) and "Direct Performance" Measures (DPM).

It should be borne in mind that these notes are concerned only with performance and satisfaction measurement and not data collection per se, which would include additional techniques such as stated preference, revealed preference and direct observations.

C.1.2 These guidance notes are supported by the matrix in **Table C.1**, 'Some Examples of Performance and Satisfaction Measures Used in Public Passenger Transport'. **Table C.1** relates to the quality loop as described in the introduction to the standard. The 'Measures of Satisfaction' column in the matrix relates to the perceived service quality from the point of view of the customer. The 'Measures of Performance' shown in the right hand column relate to the service quality targeted and the service quality delivered to the customer by the service provider. The matrix follows the classification of quality criteria used in Annex A.

C.1.3 Specific examples are then explained more fully in **Table C.2**, 'Expanded examples of measurement methods'. This should help to give guidance on how to specify and define performance or satisfaction measures at a more detailed level.

C.1.4 It should be emphasised that the examples quoted both in **Table C.1** and **Table C.2** have been drawn from the literature available to the compilers of the standard in January 1999. The lists are not exhaustive and users of the standard should decide on the most appropriate Quality of Service measures and targets bearing in mind their own circumstances. The situation will be very different, for example, between intensive services in towns and cities and more infrequent services in rural areas.

However, the starting point in all cases should be to make the measures as customer focused as possible.

C.1.5 C.2 lists a summary of the key points to be considered in designing a framework of performance or satisfaction measures. This is followed in C.3 to C.6 by more detailed guidance on performance or satisfaction measurement methods which, in particular, focuses on Customer Satisfaction Surveys (CSS), Mystery Shopping Surveys (MSS) and Direct Performance Measures (DPM).

C.1.6 Updates of annex C are planned at 3 years' intervals.

C.2 Summary of key points

C.2.1 Performance measures should be as customer focused as possible, measuring aspects of the service highlighted during market research as possessing a high degree of importance to passengers (see C.3.1).

C.2.2 Cost effectiveness of performance or satisfaction measures should be taken into account by the operator or authority when designing a performance framework (see C.3.2).

C.2.3 Appropriate measures should be used, taking into account the specific needs of the operator and/or authority and its customers. Agreement should be reached between the operator and authority on the measures and targets to be used, as recommended in the standard (see C.3.3 and C.3.4).

C.2.4 The potential needs of customers should be considered in designing a performance framework, not just the existing users (see C.3.6).

C.2.5 Performance measures should be based on clear definitions so that all parties are clear as to exactly what is measured, how it is measured and how often (see C.3.7).

C.2.6 Customer Satisfaction Surveys (CSS) assess levels of satisfaction with the service provided, against a defined scale of quality expected by the customer (see C.4.1).

Consideration should be given to when and where CSS surveys should take place according to the characteristics of the particular service. The survey technique should not bias the results (see C.4.2).

C.2.7 To identify trends, it is important that performance and satisfaction monitoring is conducted and reported on a regular and timely basis (see C.4.3).

C.2.8 Continuous assessment should be made of the suitability of the performance framework in meeting changing needs and priorities of both the operator and the customer (see C.4.3).

C.2.9 Customer perceptions can be influenced by extraneous factors (see C.4.4).

C.2.10 Mystery Shopping Surveys (MSS) measure service quality based as far as possible on objective observations carried out by independent survey teams trained to act as customers, who rate the service against pre-determined standards (see C.5.1).

MSS allows monitoring of specific elements of the service that focus on the features that are of most importance to the customer (see C.5.2).

C.2.11 Direct performance measures allow performance to be monitored and targeted against defined scales (see C.6.1).

C.3 General

C.3.1 The performance measures chosen by a service provider should focus on aspects identified as important to the customer. Consideration should be given to local circumstances and it is important to select measures appropriate to the specific needs of the service provider and the customer.

C.3.2 Measures used within a performance framework should be cost effective for the purpose for which they are designed. Targeted levels of performance should aim to achieve mutually beneficial service levels that are affordable to both the service provider and the customer.

C.3.3 The framework shown in **Table C.1** covers all the quality criteria set out in Annex A from the view of the customer. Table C.1 also provides examples of the types of measures that can be used in measuring performance against each of the Quality Criteria, and can be selected according to the needs of individual service providers.

C.3.4 Some of the quality criteria shown in the framework may not apply to individual operators or authorities, or in certain situations. Subject to the restrictions applicable in 4.3, these may be omitted where that is the case. For example, criteria 1 and 2 shown in Table C.1 may be, in effect, design parameters against which a public transport system is developed and as such it may not be appropriate to measure them on a day-to-day basis. They may not, therefore, be relevant where individual operators have little involvement in planning the network. Some users of the standard for whom these criteria are inappropriate, may prefer to opt for measurement of performance against criteria 3 onwards. It is important to note, however, that to comply with the requirements of 4.3, they will need to provide written justification for the exclusion of those criteria.

C.3.5 In addition, small service providers may not have access to specialized expertise or the necessary finance, to measure performance and may not, therefore, be able to commit the same level of resources to performance measurement, as would a larger service provider. The level of research and data collection should therefore be appropriate to the size of organization concerned. In some situations, it may be appropriate for smaller operators to combine together to provide the market research sufficient to meet their joint needs. Where recourse to such

joint projects is adopted, individual operators should ensure that their “service quality definition” (4.3) includes reference to any pooled resources.

C.3.6 The needs of potential customers should be considered when conducting market research. Service providers should assess the needs of their market beyond existing customers to ensure that performance measures focus on the service elements that are important to a wider audience. It could be that some potential customers do not use a system because of poor performance against certain criteria, and this would not be recognized from market research based solely on existing customers.

C.3.7 Clear definitions should also be produced for each measure, with relevant documentation so that exactly what the measure is covering, and the methodology for collecting the data are understood.

C.4 Customer Satisfaction Surveys (CSS)

C.4.1 Customer Satisfaction Surveys (CSS) is a tool to evaluate customer satisfaction and should therefore be clearly distinguished from a performance measurement tool. CSS is designed to assess the levels of satisfaction with the service provided and should not be considered a precise measure. CSS relates to the left hand side of the Quality Loop, as set out in the standard. By measuring satisfaction, comparisons can be made against the service quality sought by the customer. Customer satisfaction is measured against a scale where the customer is judging the extent to which the service provided meets his or her requirements. This should be distinguished from customer perception which does not measure the fulfilment of customer expectations.

C.4.2 Customers should be surveyed independently based on the most important aspects of their journey, as pre-determined by market research. It is recommended to first identify criteria which appear to be the most important for the customer and to evaluate in priority these criteria. Only after this first step should other criteria be taken into consideration. Surveys conducted should be in accordance with normal market research practice, ensuring that appropriate sampling is undertaken of all users, from all origin points on the network. Consideration should be given as to when customers should be surveyed according to the context of the operation. Surveys can take place at various points on a customer's journey, or subsequently, but consideration should be given to the time available and the avoidance of any bias.

C.4.3 It is important that surveys are conducted and reported on a regular and timely basis. In addition, it is important that continuous assessment is made of the survey's suitability to meet the needs of service providers and the priorities of the customer. This requires research into the effect of different quality improvements on customer satisfaction.

C.4.4 It should be noted that customer attitudes can be influenced by external factors, such as the performance of another service provider, and other products and services generally. This makes the use of customer satisfaction measures very difficult for target setting purposes - as opposed to direct performance measures.

C.5 Mystery Shopping Surveys (MSS)

C.5.1 Mystery Shopping Surveys (MSS) also measure quality of service, but are based as far as possible on objective observations carried out independently by trained survey teams, rather than interviews to assess customer attitudes. They make detailed observations of the service provided against specific criteria, whilst acting as if they were genuine customers travelling on the system. Surveys should be conducted according to a rigorous procedure that provides objective ratings against pre-determined standards. It is important that consistent ranking systems, using calibrated checklists, exist in order to minimize the risk of variation between assessors. MSS should also be carried out and reported on a regular and timely basis to allow the identification of any trends in performance.

C.5.2 MSS enables monitoring of specific elements of the service that focus on the features that are of greatest importance to the customer, though it cannot itself reveal these. When compared to CSS, which normally take place during or immediately after a customer's journey and are, therefore, limited by time, MSS facilitates monitoring to a greater level of detail. MSS also helps overcome the fact that customer perceptions may not reflect solely the service being measured, or performance on a specific journey.

C.6 Direct Performance Measures (DPM)

C.6.1 Direct Performance Measures monitor the actual performance of the service - either continuously from operation records, or by using sample observations taken on a representative basis.

Direct performance measures allow performance to be monitored and targeted against defined scales. Appropriate measurement systems need to be in place to collect the data, and a balance needs to be struck between full data provision and a sampling approach. It is important that measures are relevant, not simply those that are easy to produce, and focus on the impact of performance as seen by the customer. Direct performance measures should reflect overall organisational objectives at all levels, so that service providers and staff can see how they can contribute to improved performance.

C.6.2 One form of quantification is passenger counts, and passenger numbers are in any event important in determining sampling frames for market research surveys. It is important when measuring the number, distribution and length of passenger journeys to select methods that are cost effective and appropriate for the purpose for which they will be used. Local circumstances will influence the choice of method from a range of options, including direct counts, sample surveys, or estimates. The cost of passenger counts should be considered along with the use of technology that will facilitate the collection of accurate and cost effective data. When sampling is adopted, it should be at a sufficient level to ensure accuracy of the data to defined statistical limits for the purpose in hand. If estimates are used they should be based on sound knowledge and substantiated in order that the basis of calculations can be fully understood.

Table C.1 - Some examples of performance and satisfaction measures used in public passenger transport

Criteria		Measures of Satisfaction	Measures of Performance
1. Availability	1.1 Modes	CSS - Access to Modes Suitable to Meet Customers' Needs	Targeted Performance: Availability of Appropriate Modes in all areas Quantification of Performance: % of People having Access to Each Mode within Defined Criteria % of People having Access to a Mode Suitable for their Needs within Defined Criteria % of Customers living within a specific distance of a B/A point
	1.2 Network	CSS - Possibility to Go Wherever, Whenever CSS - Convenience	Targeted Performance: Stops can be Reached within Defined Time or Distance Limits Network Allows Minimal Transfers Quantification of Performance: DPM - % of Customers Having Direct Journeys
	1.3 Operation	CSS - Frequency	Targeted Performance: Minimum Frequency of Service Quantification of Performance: % Achievement of Minimum Frequency
	1.4 Suitability	CSS for Target User Groups - e.g.: CSS - Suitability/Facilities for Disabled Users CSS - Suitability for Children CSS - Suitability for Elderly Users CSS - Suitability for Commuters	Targeted Performance: Provision of Service Suitable for all Existing and Potential Users Measurement of Performance:
	1.5 Dependability	CSS - Confidence in Network	Targeted Performance: Network that Instills Confidence in Users Measurement of Performance:

*An example of a more detailed definition is shown in Table C.2.

CSS - Customer Satisfaction Surveys
MSS - Mystery Shopping Surveys
DPM - Direct Performance Measures

Criteria		Measures of Satisfaction	Measures of Performance
2. Accessibility	2.1 External Interface	CSS - Interface with Users (Accessibility from Car Parks etc.)	Targeted Performance: Specified Criteria for Ease of Accessibility (e.g. step free) Measurement of Performance: DPM - Ease of Accessibility against Specific Criteria
	2.2 Internal Interface	CSS - e.g. Lifts/Escalators	Targeted Performance: System Designed to Optimise Ease of Internal Movement Measurement of Performance: DPM - Journey Time, weighted by Passenger Numbers - Overall Access, Egress and Interchange Time (4.1) - Excess Access, Egress and Interchange Time (4.2) DPM - Walking Distances/Times Between Specified Travel Points
	2.3 Ticketing	CSS - Ease of Obtaining a Ticket CSS - Passenger Obtaining the Correct or Most Suitable Ticket	Targeted Performance: Provision of Specified Ticket Issuing Facilities within Network Provision of Specified Ticketing Outside of Network Provision of Ticketing In Advance of Travel Date (within/outside network) Measurement of Performance: MSS - Performance of Ticket Selling Service
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures			

Criteria	Measures of Satisfaction	Measures of Performance
3. Information 3.1 General Information	CSS- Availability of Information CSS - Accuracy, Timeliness and Intelligibility of Information	Targeted Performance: Provision of Accurate Understandable and Useful Information about the Service and Network Measurement of Performance: MSS - Availability of Timetables and Informative Materials DPM - % of Telephone Inquiries Answered in Accordance with the standard (5.2)
3.2 Travel Information Normal conditions	CSS - Information at Stations, Stops and on Vehicles CSS - Availability of Information CSS - Accuracy and Utility of Information	Targeted Performance: Provision of Accurate, Understandable and Useful Information Measurement of Performance: MSS - Information at B/A points* MSS - Staff Knowledge, Accuracy and Courtesy (5.3) MSS - Clear Indication of Destinations MSS - Passengers Receiving Correct Information at B/A points
3.3 Travel Information Abnormal Conditions	CSS - Information at Stations/Stops and on Vehicles CSS - Availability of Public Address CSS - Helpfulness of Announcements	Targeted Performance: Provision of Accurate and Timely Information Measurement of Performance: MSS - Accuracy and Timeliness of Information at B/A points and on Vehicles (5.4)
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures		

Criteria	Measures of Satisfaction	Measures of Performance
4. Time 4.1 Length of Trip Time	CSS - Journey Time	Targeted Performance: Minimize Travel Time Measurement of Performance: DPM - Journey Time, Weighted by Passenger Numbers* - Overall Average Journey Time - Overall Access, Egress and Interchange Time (2.2) - Overall Average In-Vehicle Time - Ticket Purchase Time
4.2 Adherence to Schedule	CSS - Punctuality Against Timetable CSS - Regularity CSS - Reliability of Service	Targeted Performance: Maximize Levels of Reliability Measurement of Performance: - Headways/Intervals DPM - Time Passengers Wait at B/A points - Performance Against Schedule DPM - Timetable Wait - % Passengers Earlier/Later than Advertised DPM - % of Passengers Arriving on Time DPM - % of Passengers Departing Early/Late DPM - % of Connections Met MSS - Adherence to Schedules DPM - % of Customers Finding Lifts/Escalators in Working Order DPM - Journey Time, Weighted by Passenger Numbers* - Excess Journey Time - Excess Waiting Time - Excess Access, Egress and Interchange Time (2.2) - Excess Ticket Purchase Time
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures		

Criteria		Measures of Satisfaction		Measures of Performance	
5. Customer Care	5.1 Commitment	CSS – Overall		Targeted Performance: Customer Charter Designed to Deliver a Service Committed to the Customer Measurement of Performance:	
	5.2 Customer Interface	CSS - Customer Service CSS - Proficiency in Handling Customer Concerns and Complaints		Targeted Performance: Standards/Timescales for Responses to Customer Complaints/Claims Measurement of Performance: DPM - Speed of Responses to Customer Complaints, Commendations and Claims DPM - % of Telephone Inquiries Answered in Accordance with the standard (3.1)	
	5.3 Staff	CSS - Staff Knowledge CSS - Appearance/Behaviour CSS - Staff Availability		Targeted Performance: Agreed Standards of Welcoming Customers Measurement of Performance: MSS - Customers Welcomed in Accordance with Agreed Standard* MSS - Staff Knowledge, Accuracy and Courtesy (3.2) MSS - Staff Appearance	
	5.4 Assistance	CSS - Communication with Customers CSS - Staff Helpfulness		Targeted Performance: Agreed Standards of Staff Assistance Measurement of Performance: MSS - Staff Helpfulness and Availability MSS – Correctness and Timeliness of Information at Stations/Stops and on Vehicles (3.3)	
	5.5 Ticketing Options	CSS - Ticketing, Pricing and Range of Choice		Targeted Performance: Ticketing Options Aligned with Customer Needs Measurement of Performance:	
*An example of a more detailed definition is shown in Table C.2					
CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures					

Criteria	Measures of Satisfaction	Measures of Performance
6. Comfort		Targeted Performance: Measurement of performance
6.1 Useability of passenger facilities		
6.2 Seating and Personal Space	CSS Level of Crowding	Targeted Performance: Agreed Standard of Comfort Measurement of Performance: DPM - Passenger Counts/Loadings against Planned Levels DPM - % Chance Being on Vehicle with All Seats Full (against predicted levels)
6.3 Ride Comfort	CSS – Driving CSS - Vehicle Comfort and Cleanliness	Targeted Performance: Agreed Standards of Ride Comfort Measurements of Performance: DPM - % Of Journeys in Accordance with Agreed Standards DPM - Proportion of Passengers Travelling in Vehicles that Meet Technical Measures of Ride Quality MSS - Ride Quality/Driving Standards
6.4 Ambient Conditions	CSS - Station/Stop Service CSS - Travel Environment CSS – Cleanliness CSS - Vehicle Environment	Agreed Standard of Ambience Measurement of Performance: - General Travel Environment MSS - Ambience* MSS - Noise MSS - Temperature - Cleanliness MSS - Cleanliness

Criteria	Measures of Satisfaction	Measures of Performance
6.5 Optional Facilities	CSS - Availability of Station/Stops Facilities CSS - Availability of On-Board Facilities	Targeted Performance: Provision of Facilities in Accordance with Defined Customer Standards Measurements of Performance: MSS - Other B/A point or On-Board Facilities MSS - Facilities in Working Order
6.6 Ergonomy	CSS - Station/Stops Design	Targeted Performance: Design of B/A points Meeting Customer Needs Measurements of Performance: MSS - B/A points Meet Design Criteria
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures		

Criteria	Measures of Satisfaction	Measures of Performance
7. Security 7.1 Freedom from Crime	CSS - Perception of Security*	Targeted Performance: Provision of a Safe and Secure Service to Passengers Measures of Performance: DPM - Rates of Reported Crime Against Passengers DPM - Rates of Reported Crime Against Employees
7.2 Freedom From Accident	CSS - Safety*	Targeted Performance: Safety of Customers and Road Users Measurements of Performance: Recorded Accident and/or Injury Rates
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures		

Criteria	Measures of Satisfaction	Measures of Performance
8. Environment	8.1 Pollution CSS - Noise and Other Pollution	Targeted Performance: Pollution/Waste Levels Not to be Exceeded Measurement of Performance: DPM - % of Vehicles Meeting Noise and Particulates Emission Targets* DPM - Waste Management*
8.2 Natural Resources		Targeted Performance: Reduce Energy Consumption per Unit of Output Measurement of Performance: DPM - Fuel Consumption
8.3 Infrastructure		Targeted Performance: Measurement of Performance:
*An example of a more detailed definition is shown in Table C.2 CSS - Customer Satisfaction Surveys MSS - Mystery Shopping Surveys DPM - Direct Performance Measures		

In order to facilitate the application of Table C.1 a number of examples are explained in more detail in Table C.2.

Table C.2 – Expanded examples of measurement methods

Attribute	Specific Examples of Definitions
3. Information	- MSS: Information at Stops/Stations - % of passengers waiting at stops with information provided to agreed standards "Mystery shoppers" visit stops to measure how well the information provided to passengers conforms with agreed standards. Performance is compared to the definition of the standard which details the required level of service and the unacceptable performance thresholds. Weightings are applied to reflect the number of customers at stops
4. Time	- Overall and Excess Average Weighted Journey Times This measure monitors progress towards minimizing customers' journey time. Performance data and sample surveys are used to determine the average time taken for a journey on the system. The times are weighted for the value of time for inconvenient aspects of the journey, such as walking between lines or waiting on platforms, as determined by market research. The overall journey time is broken down into access, egress and interchange time, ticket purchase time, on-train time and platform waiting time. The actual overall average journey time is compared to the planned journey time to produce an average excess journey time per passenger.
5. Customer Care	- % Customers Welcomed in Accordance with Agreed Standard Ticket offices are visited by a "mystery shopper" who measures how well the reception provided to customers conforms with agreed standards. The measure checks that the service experienced by the customer conforms with the standard in the following areas: - Ticket office easy to find - Cleanliness of window - Lighting and organization - Staff availability and politeness - Choices of payment methods Weightings are applied to reflect the number of customers at the ticket office.

(to be continued)

Attribute	Specific Examples of Definitions
6. Comfort	- MSS – Ambience "Mystery Shoppers" travel around the network checking attributes identified as being important by customers. Specific journeys are assigned to surveyors who rate aspects of the service, such as crowding levels and cleanliness against pre-defined standards. - Availability of Lifts and Escalators - % of customers finding lifts/escalators in working order Every escalator is inspected on a weekly basis by an assessor who notes the operational state, the time and the date. The availability of the escalator is tabled against the relevant time slot and the expected average flow of passengers during that time to enable calculation of the % of passengers finding escalators in working order. Alternatively, the operational state of lifts and escalators could be checked automatically.
7. Security	CSS - Safety and Security As part of Customer Satisfaction Surveys, passengers who have just completed a journey are asked to rate the service on aspects identified as possessing high importance to the customer. Customers provide a rating on their perceptions of personal safety in both stations and on trains. An example of a CSS question, in this case relating to Safety and Security, is as follows: I would like you to think about your train journey today. Please tell me how satisfied you were with the service you experienced, using a scale from x to xx, where xx is extremely satisfied and x is extremely dissatisfied. How satisfied were you in terms of your personal safety during the journey.
8. Environment	- Waste Management - The total weight (in tonnes) of solid waste which cannot be reused or incorporated within recycling schemes Controlled solid waste material collected through internal refuse collection processes is measured to enable monitoring against targeted waste levels. - Bus Emissions Bus emissions reach a maximum of 70 % of the upper value detailed in the National Regulation.