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Assessment of the performance of the network related to rail traffic operation for the purpose of quality analyses - delay coding and delay cause attribution process

Evaluation des performances du réseau en ce qui concerne l'exploitation du trafic ferroviaire, en vue de la réalisation d'analyses de qualité : méthode de codification des retards et d'affectation des causes de retard

Bewertung der Qualität auf dem Netz, in Bezug auf den Eisenbahnbetrieb, zur Durchführung von Qualitätsanalysen - Codierung von Verspätungen und Verfahren für die Zuordnung von Verspätungsursachen



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2nd edition, July 1994	Titled: "Inter-railway cooperation for the exchange of statistical and analytical data on international passenger and freight train movements".
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The person responsible for this leaflet is named in the UIC Code

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Summary

This Leaflet is intended to ensure that Infrastructure Managers, Railway Undertakings and other organisations involved in quality analysis of international railway traffic are in possession of uniform data on the reliability of international passenger and freight trains, thus enabling them to analyse and steer punctuality on all the services.

With this in view, the Leaflet establishes a common coding system for identifying the causes of delays and not provided services. Furthermore it specifies unified methods and concepts intended for recording, transmitting and analysing the necessary data.

1 - Purpose

Punctuality is one of the essential factors in the quality of train services.

The purpose of this Leaflet is therefore to enable Infrastructure Managers and Railway Undertakings involved in international traffic to measure punctuality in a uniform way and acquire uniform data on the reliability of international passenger and freight train movements. The IM (see [List of abbreviations - page 22](#)) has the responsibility of coordination in this process.

2 - Structure

In order to establish and improve high level punctuality in international traffic it is necessary to measure punctuality of trains and to identify the causes for delays and cancelled services in a common way. While the allocation of causes is a task of the Infrastructure Manager (IM) it is necessary for the acceptance that the Railway Undertakings (RU) (see [List of abbreviations - page 22](#)) validate these causes. If the IM is operating the train he has the role of the RU.

Thus a commonly accepted and applied view of performance measurement is established which is used by IMs and RUs to get a common picture of actual performance and to develop actions to improve performance, either internally or together.

The main part of this leaflet is the coding table for delay causes and the application rules. This coding table provides a basic overview on the causes which influence train performance. It is permissible that on domestic level more detailed coding systems are used to identify delay causes according to specific rules and regulations. In this case it has to be ensured that domestic codes can be transferred into the codes described in this leaflet.

Although mainly international traffic is concerned it is recommended to use the same coding system for domestic traffic in order to enable comparable results for benchmarking and the best practice comparisons.

The leaflet allows the collection, preparation and transmission of data either manually or by computer. The standardisation of the data and the rules governing its electronic transmission and processing are covered by *UIC Leaflet 407-1* (see [Bibliography - page 23](#)).

3 - Confidentiality of data

The data shall remain the property of the Infrastructure Manager providing it. Notwithstanding this circumstance, the data shall be in principle confidential for IMs and for RUs receiving it.

In this respect, the involved organisations (IMs or RUs) may divulge information on the data according to laws or contractual provisions governing the use and confidentiality of data.

Further rules on confidentiality may be provided for among the parties involved in the specific projects of analyses of the data.

4 - Measurement of the punctuality

Punctuality of a train is measured on the base of comparisons between the time planned in the timetable of a train identified by its train number and the actual running time at certain measuring points. A measuring point is a specific location on route where the trains running data are captured. One can choose to measure the departure, arrival or run through time.

In international traffic the comparison should always be done against an internationally agreed timetable for the whole train run. Some IMs allocate a new timetable in case of delays. In these cases it has to be certified that either a new timetable is allocated for the whole remaining part of the train run or the comparison is made against the originally planned timetable. If neither is possible the train run should not be considered.

At the departure station of the train, its final destination and at points where responsibility is handed over from one IM to another or from one RU to another, divergences between the scheduled timetable and the actual running times are measured. Additionally it is recommended to measure also at other points of bigger importance (traffic nodes, shunting yards).

In order to achieve a higher quality of the analyses, it is important to use a train number according to the *UIC Leaflets 419-1 and 419-2* (see [Bibliography - page 23](#)) during the whole train run. And thus avoid the operational procedures such as load shifting and changes of timetable which are not internationally agreed.

4.1 - Rounding rules

The divergences between the scheduled timetable and the actual running times are usually reported in minutes. If the measurement is done by automatic systems the result is a value in minutes and seconds that is rounded to minutes. The way this rounding is done can have considerably influence on punctuality statistics.

Known ways to manage the rounding are:

1. Always rounding up to full minutes - 4:01 is considered as 5.
2. Round down until 29", round up from 30" on - 4:30 is considered as 5.
3. No consideration of seconds - 5:59 is still considered as 5.

It is recommended to use variant 2.

4.2 - Threshold value

Punctuality is measured by setting a threshold up to which trains are considered as punctual and building a percentage:

$$\text{Punctuality} = \frac{\text{Number of measures} \leq \text{threshold}}{\text{Number of all measures}}$$

It is recommended to set this threshold to 5 minutes.

If a specific project / working group decides to choose other than the recommended values it is important to clarify the following topics in order to achieve consistent information:

1. Points and train status to be considered,
2. Clarification of timetable behaviour,
3. Uniform behaviour in rounding seconds,
4. Threshold for punctuality.