

## Measuring and coding systems of the Infrastructure Managers:

### a) Current measuring system of MÁV Zrt:

Qualification of trains in terms of punctuality will happen in accordance with international practice (UIC Leaflet 450-2) on the basis of delay found at the final station or delay referring to the last stations of the train run. The train shall be qualified as punctual if the train arrives at the final station or at the last station of train run on schedule or with a delay not exceeding the punctuality tolerance. In case of trains leaving the rail network of MÁV Zrt, border station/connection station shall be considered to be a final station, but at this stations basis of evaluation shall be the departure time of the train leaving the network. In accordance with provisions of Decree No 101/2007 (XII.22.) GKM on detailed rules of access to rail network as well as principle of the Performance Regime, MÁV Zrt. does not evaluate trains running on the basis of an instant request for punctuality.

There are six operation control centres on the network of A MÁV Zrt. The railway network management is a two-level management. More than half of the network is not automated; coordination of train traffic operation is performed by the operation control. On a certain part of the network, KÖFE and KÖFI (Central Traffic Management, Central Traffic Control) systems are installed.

Coding system of MÁV Zrt is based on the UIC Leaflet 450-2 with an amendment that since 1997 the causes for train delays and the party causing the delay have been distinguished. In current situation the party responsible for causing delay (either the infrastructure manager or the authorised applicant) shall be recorded.

Accordingly, two codes belong to each delay event:

a) Main code

b) Auxiliary code

The „main code” which consists of two characters (the first character is always a digit, the second one might be a digit or a script) serves for identifying the most frequently occurring delay causes. The „auxiliary code” which is also a two-character code (the first character is always a digit, the second one might be either digit or script) marks concretely those companies which are responsible for causing train delay (should they be either infrastructure managers or authorised applicants or third companies who are directly not participating in the train operation, but the not proper activity of which affects train operation). The table of „auxiliary codes” is getting larger and larger by the appearance of new railway companies. Companies which terminate their activity will not be deleted from the system in order to be able to find them later.

Current coding system of A MÁV Zrt is regulated by the Instruction of the President-General Manager No 28/2012. (V. 18. MÁV Zrt. 21.) EVIG on evaluation and analysis of punctuality of trains as well as managing and analyzing of information on exceptional events. Although delay codes are registered even if the train has a 1 minute delay, current system of MÁV Zrt considers 5 minutes as a threshold of punctuality in case of passenger trains (in compliance with UIC Leaflet 450-2) which means that up to a delay of 5 minutes (in practice 5 minutes and 59 seconds) measured at the final station or at the last station of the train run the train will be evaluated to be punctual.

For freight and other trains the threshold for punctuality is a delay of 30 minutes. For recording and coding train delay events and other exceptional events MÁV Zrt uses informatics systems in its own operation.

When deviating from the allocated train path, FOR00 recording subsystem of the track use invoicing and statistical system of MÁV Zrt will permit the entering of other data to be recorded into the system only after the delay codes at measuring points have been given.

The system stores the recorded codes at the measuring point; they are thereafter available and open to the users. If the train in comparison to the previous measuring point does not suffer further delays when arriving at the next

measuring point no delay event will be registered, delay codes recorded at the previous measuring point will be taken over.

The recording subsystem does not handle the decrease of delays. If a train reduces its suffered and recorded delays when arriving at its subsequent measuring point, after recording the time of arrival, the party causing the delay-decrease will not be recorded, since no further positive deviations from the allocated train path will result, compared to data recorded at the previous measuring point.

In order to carry out impact examination on the Performance Regime, MÁV Zrt shall hand over to VPE codes based on the main code prescribed above and in accordance with UIC Leaflet 450-2.

#### b) Current system of GYSEV Zrt

On the railway network of GYSEV Zrt collection, handling and evaluation of data takes place in the Integrated Railway Network Data Managing System (VIHAR). This complex system comprises several modules.

Among these modules it is the operation module which contains train documents, train tracking, wagon tracking, daily analysis lists, statements, traffic statistics, analysing inquiries.

In the current situation, the system automatically demands delay codes crucial from the performance regime's point of view when the difference between plan/fact data is at least 1 minute.

Coding system of GYSEV Zrt is based on the coding system of the UIC Leaflet 450-2. If delay increases, the number of minutes may be raised and by distributing delay minutes several delay reasons may be registered for every case. The system is at the moment not able to handle the splitting-up of delay reductions to codings.

On the railway network operated by GYSEV Zrt, the KÖFI (Central Traffic Control) system is in operation. The arrival and departure data of trains gained from KÖFI can be found in the VIHAR system.