The following document has been produced by the European Railway Agency as Final Report on the issues raised in paragraph 2.2 of the Annex of the Commission Decision 2007/756/EC of 09/11/2007 adopting a common specification of the National Vehicle Register concerning the EU global NVR architecture.

This document is intended to inform the Committee established by Art. 21 of Directive 96/48/EC on the work carried out. This document is the basis for the Agency Recommendation on the updating of the NVR Decision.
## AMENDMENT RECORD

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1. INTRODUCTION

1.1. SUBJECT

Commission Decision 2007/756/EC of 09/11/2007 adopting a common specification of the national vehicle register (NVR) requires (the following list is not exhaustive):

- the NVR of a Member State (MS) to contain all vehicles authorised in that MS. However freight wagons and passenger cars should be only registered in the NVR of the MS where they are first placed in service.

- Each MS to establish a computer-based NVR.

- The European Railway Agency (ERA) to carry out a pilot project on a European Centralised Virtual Vehicle Register (ECVVR) with at least 3 MSs’ NVRs connected to it, including a successful connection of an existing NVR using a Translation Engine (TE).

- An evaluation of the pilot project and where appropriate an updating of the Commission Decision 2007/756/EC.

- Publication by the ERA of the specifications to be used by MSs to connect their NVRs with the central VVR.

- The MSs to connect their NVRs to the central VVR once the effective functioning of the VVR has been demonstrated.

This final report has been established in accordance with the above-mentioned Commission Decision and provides the evaluation of the ECVVR pilot project.

1.2. PILOT PROJECT

The ECVVR pilot project has been managed according to the following steps:

- the design and development phase - between 01/2007 and 08/2007- where the use cases defined in the Annex to the Commission Decision have been developed in cooperation with the three pilot MSs: FR, IT, NL and an ERA IT sub-contractor (infeurope).

- The deployment and evaluation phase of the pilot project by the pilot team (ERA, FR, IT, NL and infeurope) between 08/2007 and 02/2008.

- The extension of the deployment and evaluation phase to the other MSs between 02/2008 and 04/2009.

- The final evaluation of the ECVVR system between 04/2009 and 05/2009.

During the different steps of the pilot projects, adjustments and modifications have been brought to the applications: sNVR and VVR. The last version 1.08 was released on 28/04/09.
The version 1.08 of the application takes into account the modifications required by the users during the test and evaluation phase.

The software updating will be released when necessary.
2. ECVVR COMPONENTS AND RELATED DOCUMENTATION

All related documentation mentioned in this chapter is attached as Annex 1. However, due to security reasons the access to it is restricted to the Registration Entities (REs).

2.1. STANDARD NVR (sNVR)

The standard National Vehicle Register (sNVR) is a subsystem of the ECVVR.

The job of the sNVR is to manage information about vehicles at a national level. So it means in detail that it will be able to

- perform vehicle registrations/authorizations and also
- manage applications for vehicle registrations/authorisations.

The different roles and functionalities of the subsystem are described in the following documents:

- the “sNVR administrator guide”, which provides technical information on how to log in, to manage its own account and to configure the sNVR.
- The “sNVR user guide”, which provides technical information from the user’s point of view on how to log in and to manage both the applications for vehicle registrations and authorizations.
- The “sNVR COMMA SEPARATED VALUE-CSV import” and the “sNVR CSV export”, which detail how to perform the CSV import/export of massive data from/to a sNVR, by an EXCEL application (e.g. if two Registration Entities need to exchange such data between their NVRs).
- The “sNVR deployment guide”, which defines how to install the sNVR component of the ECVVR, as well as the components which are necessary for the communication.
- The “sNVR DB” documentation and the “sNVR sources”, which contain the whole sNVR database as well as its sources.

2.2. TRANSLATION ENGINE (TE)

The following documents deal with the integration of existing IT systems at national level into the ECVVR, through an interface named TE:

- the “NVR-TE integration guide” providing an overview of the translation engine;
- the “NVR-TE deployment guide” describing how to install the NVR-TE component of the ECVVR;
- the “NVR-TE sources” containing the whole set of sources.
2.3. VIRTUAL VEHICLE REGISTER (VVR)

The Virtual Vehicle Register (VVR) is the other subsystem of the ECVVR. It allows all its users to access information relating to the registrations and authorisations of railway vehicles in the EU.

Therefore the VVR makes the distributed National Vehicle Registers (NVRs) transparent to the users and permits information to be retrieved in an efficient manner.

The following documents support VVR:

- the “VVR administrator guide” providing technical information on how to manage its own account, and other users, how to configure the VVR and monitoring NVR connections.

- The “VVR deployment guide” describing how to install the different components of the European Vehicle Register (ECVVR), as well as the components which are necessary for the communication.

- The “VVR user guide” explaining in detail the main functionalities that can be performed by the VVR User such as managing accounts, searching for registrations and authorizations across all available NVRs, managing reports etc.

- Finally, The “VVR sources” contains the whole mass of sources.

2.4. ECVVR SECURITY SETTINGS

Two types of communications occur with the VVR, both requiring security:

- access to the ECVVR Web Application from user’s side

- access to the ECVVR Web Services from other NVRs.

In order to allow users to secure the VVR systems communications an updating has been introducing on the basis of the relative pilot phase outcomes.

Nevertheless, neither the security of the server on which the application is installed nor the network to access it are covered by this application. This depends highly on the technical environment and on the policies in place in the organisation.

The related document details how to secure the ECVVR components (VVR, sNVR and TE).
3. ECVVR IMPLEMENTATION STATUS

3.1. SYSTEM ARCHITECTURE

The ECVVR system architecture is based on a decentralised solution, where by a search engine implementation, users are allowed to retrieve data from the local register (NVR) hosted by each MS through the central VVR hosted by ERA.

NVR data are stored at national level and they are accessible by using a web-based application.

3.2. TECHNICAL SOLUTIONS OF DIFFERENT MEMBER STATES

Two workshops have been organised by ERA with the NSA/RE during the pilot project:

- A first one on 12/02/08, where the other MS were invited to test the application after a successful test phase with the three pilot MS.

- A second one on 19/11/08, where all the MS were invited to connect their NVR to the VVR developed and modified according to the results of the test phase.

The following table summarises the MSs’ technical solution as well as their current implementation status.
<table>
<thead>
<tr>
<th>MS</th>
<th>Technical solution</th>
<th>Connection with the VVR</th>
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<tbody>
<tr>
<td>AT</td>
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<tr>
<td>BE</td>
<td>TE</td>
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<tr>
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<td>Connected</td>
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<tr>
<td>UK</td>
<td>TE</td>
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</table>

* MS connected to VVR Production Environment

** MS connected to VVR Test Environment
4. CONCLUSIONS ON THE EVALUATION OF THE PILOT PROJECT

According to the table of section 3.2:

- nine MSs are successfully connected to VVR (Production Environment), out of which eight with a sNVR and one with a TE;
- three MSs are connected through the VVR Test Environment, out of which one with an sNVR and two with a TE;
- twelve MSs plan to connect their NVRs/TEs to VVR by December 2009;
- Finland plans to connect its TE in 2010;
- Estonia has already chosen its IT technical solution; the date for its implementation has not been communicated to ERA yet.

As conclusion of the pilot phase, it could be considered that the ECVVR system is implemented with a significant number of MSs’ NVRs/TEs connected to VVR.

Furthermore, ERA recommends the following issues:

**IT aspects**

According to the figures of the table of section 3.2, by December 2009 twenty-four MSs will be connected to the VVR.

Feedback from the users should be collected by ERA from now until 2010 to be taken into account for the new releases of the system.

**Business aspects**

During the workshop organised on 19/11/08 with the NSAs/REs, a list of questions related to the understanding and implementation of the Commission Decision were dealt with (see Annex 2). Then many other comments and requests of clarifications have been collected.

Since most of the questions are linked to definitions and procedures, in order to clarify them, ERA considered useful to develop an application guide of the Commission Decision on the NVR and the ECVVR. At the present, ERA collaborates with the REs in drafting this Guide.

One year after the decision on connecting the NVRs to the VVR comes into force, ERA will prepare a report on the return of experience gathered during this first year of operation of ECVVR.
5. **LIST OF ANNEXES**

1. **ECVVR TECHNICAL DOCUMENTATION (restricted to Registration Entities)**
   
   1.1. **The standard NVR (sNVR)**
      
      1.1.1. sNVR administrator guide
      1.1.2. sNVR CSV import and export
      1.1.3. sNVR deployment guide
      1.1.4. sNVR user guide
      1.1.5. sNVR DB documentation
      1.1.6. sNVR sources
   
   1.2. **The translation Engine (TE)**
      
      1.2.1. TE integration guide
      1.2.2. TE deployment guide
      1.2.3. NVR-TE sources
   
   1.3. **The Virtual vehicle Register (VVR)**
      
      1.3.1. VVR administrator guide
      1.3.2. VVR deployment guide
      1.3.3. VVR user guide
      1.3.4. VVR sources
   
   1.4. **ECVVR Security settings**

2. **INTERPRETATION RESULT CHART**