Stating the issue

This presentation deals with the following constellation:

01 The Vehicle is already registered

02 The vehicle shall undergo a software update

03 The software update will change the properties of the vehicle such that
   • one or more existing type approvals covering systems in the vehicle are affected and/or
   • one or more additional type approvals are necessary to cover additional functionalities

All cases where updates do not affect type approval or where vehicles are not yet registered are simpler and can be handled according to existing processes
Certification of relevant software updates: main concepts

Software identification number (RxxSWIN)
- In relation to one UN Regulation
- Updated only for certification relevant updates
- If an update affects several system type approvals, the RxxSWIN of each of those must be updated
- RxxSWIN must be readable from the vehicle (e.g. via OBD connector), needed e.g. for periodic technical inspection (PTI)

Central (UN-) database for individual vehicle data (DETA)
- Contains approval information: which type approvals cover the individual vehicle and the RxxSWIN
- Allows for an „update of the data“ over the vehicle lifecycle

Other
- The manufacturer must decide and document which vehicles may receive a given update
- If an update also affects the registration of a vehicle this must be handled according to national processes (e.g.: update of engine power might affect taxation)
Need to type approve SW update before update of registered vehicles

- Produced vehicle
  - Send VIN based list of approvals and RxxSWIN to database (DETA)

- First registration
  - SW update with secured procedure
    - R79SWIN 0032201 is covered by new system type approval R-79 00322 Ext 01

- Modified vehicle

- New system type approval document RxxSWIN 00322 01

- New system type approval document R79SWIN 00322 Ext 01

- System type approval information document R79SWIN 00322 00

- System type approval certificate R-79 00322 Ext 00

- Extension of type approval

- Registration

- Step 2 national regime:
  - Police or PTI can read RxxSWIN and check whether registration certificate covers RxxSWIN on the vehicle

- Modified Registration certificate

- Send modified VIN based list of approvals and RxxSWIN to database (DETA)

- Modified vehicle

- OBD Interface
  - if necessary if modification affects registration parameters
## Link between SW versions of different Electronic Control Units (ECUs) and RxxSWIN

**Example: 4 ECUs have an impact on the type approval of R79**

<table>
<thead>
<tr>
<th>Type approval test</th>
<th>First registration</th>
<th>After registration</th>
<th>Update with TA impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECU</td>
<td>SW version</td>
<td>ECU</td>
<td>SW version</td>
</tr>
<tr>
<td>1</td>
<td>V3.6</td>
<td>1</td>
<td>V3.9</td>
</tr>
<tr>
<td>2</td>
<td>V1.3</td>
<td>2</td>
<td>V1.4</td>
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<td>V1.6</td>
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</tr>
<tr>
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<td>V8.9</td>
<td>4</td>
<td>V9.1</td>
</tr>
</tbody>
</table>

R79 00322 Ext 00  
R79SWIN 00322 00  
R79 00322 Ext 01  
R79SWIN 00322 01