Subject: [railML3] Improvement for railML element „etcsLevelTransition"
Posted by Karl-Friedemann Jerosch on Mon, 31 May 2021 15:52:25 GMT
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With railML 3.2 beta1 (=alpha2 of March 2021) the new element "etcsLevelTransition" required for use case "ETCS Track Net" has been added, modelled as following:

```
<railML>
  <infrastructure>
    <functionalInfrastructure>
      <etcsLevelTransitions>
        <etcsLevelTransition>
          <switchToLevel value="Level 2" lengthOfAcknowledgement="50"/>
          <switchToLevel value="Level NTC 6" lengthOfAcknowledgement="50"/>
          <switchToLevel value="Level 0" lengthOfAcknowledgement="50"/>
          </etcsLevelTransition>
      </etcsLevelTransitions>
    </functionalInfrastructure>
  </infrastructure>
</railML>
```

Improvement 1:
In the current modelling, the sequence of the listed levels in railML provides implicitly the "Table of Priority" according to UNISIG SUBSET-026 (versions 2.3.0/3.4.0/3.6.0) section 5.10.2.3 .
Not strictly considering of the sequence during the export of a railML-file results in an incorrect data file.
To avoid this problem, the suggestion is to add a new attribute "priority" providing explicitly the priority of each level for to the "Table of Priority".

Improvement 2:
The possible entries for attribute "value" consist always of a text part and a non-negative-integer part. To avoid problems during data exchange due to missing syntax requirements for attribute "value" (for example: "ETCS Level NTC 6" or "NTC_6" or "NTC 06" and so on), the suggestion is to divide the information into two attributes:
- attribute "level_kind" to provide the text string with values "level", "level_ntc" and "unknown"
- attribute "value" to provide a non-negative-integer value.

Conclusion:
With improvements 1 and 2 the example will now look like:

```
<railML>
  <infrastructure>
    <functionalInfrastructure>
      <etcsLevelTransitions>
        <switchToLevel level_kind="level" value="2" priority="1" lengthOfAcknowledgement="50"/>
```

```
        <switchToLevel level_kind="level_ntc" value="6" priority="2"
lengthOfAcknowledgement="50"/>
        <switchToLevel level_kind="level" value="0" priority="3" lengthOfAcknowledgement="50"/>
      </etcsLevelTransitions>
    </functionalInfrastructure>
  </infrastructure>
</railML>
```

Note: level_kind="unknown" can be used if the information about the ATP equipment of the neighboring track section is currently missing and will be determined later.
