Subject: Include track length information in topology
Posted by Martin Karlsson on Thu, 17 May 2018 08:21:11 GMT
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The RailTopoModel contains no information about lengths of tracks. It is concerned only with the relations between the network elements, not with their physical dimensions. However, practically all use cases imaginable will need the track length information to calculate travel times, to compare with train lengths, etc. So in the railML model, it has to be included in some way.

This issue has been discussed in a previous forum post (https://www.railml.org/forum/index.php?t=msg&th=472&start=0& amp; amp; amp;), and the solution in version 3.1 beta was to introduce a Track object within the FunctionalInfrastructure view. The Track is mapped to a NetElement in the Topology view, but adds a length attribute. A trackside object may be mapped to a position at a distance on a Track through the child elements trackPosition and trackSection, which were added to the RTM originated location elements of spotLocation, linearLocation and areaLocation.

It has been argued that this solution adds unnecessary complexity to the model, by in effect acting as a second layer topology model, within the FunctionalInfrastructure view. This could be avoided by instead including length information in the Topology view.

A proposal discussed in the In2Rail/railML collaboration team is to
 Add an attribute "length" of type tLengthM to the class NetElement. NetElement is derived from the RTM class LinearElement, which remains unaltered. tLengthM indicates that the length is in meters, with decimals. The value of "length" shall be the full length between agreed reference points in the delimiting crossings, so that the aggregated length over consecutive tracks always reflects the correct total distance Add an attribute "pos" to the spotLocation child element in the Entity class. In order to do this without changing the RTM classes SpotLocation and LocatedNetEntity, new derived classes may need to be created. The value of "pos" shall be the distance from the agreed reference point in the crossing at leg 0 of the net element In the same way, add attributes "posBegin" and "posEnd" of type tLengthM to the associatedElement element used in linearLocation and areaLocation child elements of the Entity class Remove trackPosition and trackSection elements from class Entity Remove class Track Remove abstract base class TrackNode, and reparent its descendants (Switch, Crossing and BufferStop) to Entity. The TrackNode was introduced to allow a Track to refer to the functional assets at its ends, hence it is no longer needed
The new attributes should all be optional in the XSD, but the following application rules should apply:
 "length" shall be mandatory in NetElements within a "Micro" description level network (i.e. representing a track), optional on other levels "pos", "posBegin" and "posEnd" may only be used in Entities referring to a NetElement with a "length" When "pos" is defined, "intrinsicCoord" may be omitted, as it's value can be derived from "pos" and "length" (same rule for posBegin/intrinsicCoordBegin and posEnd/intrinsicCoordEnd respectively)