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Subject: Missing attributes and maybe elements in railML3.2 for RTCI-a

Posted by [Torben Brand](#) on Thu, 21 Sep 2023 19:27:44 GMT

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The mapping in post "Requirements for RTCI-a (Infrastructure) UC"

[https://www.railml.org/forum/index.php?t=msg&th=922&start=0&](https://www.railml.org/forum/index.php?t=msg&th=922&start=0)

has revealed that all items are present in railML2.5 (and in railML2.4nor) and most items are present in railML3.2. But some are missing and some might be missing.

These are in prioritised order:

- Tunnel resistance
- Electrification change (macroscopic)
- Train protection system change (macroscopic)
- Operational rules

The items are introduced bellow. If there are development ideas for railML3.3 I suggest to make a separate post.

Tunnel (resistance)

Uses <overCrossing> but is missing resistance factor attribute.

in railML2.5 used: tunnel@resistanceFactorPassenger and @resistanceFactorFreight

(<https://wiki2.railml.org/wiki/IS:tunnel>)

Suggest to add as new attribute in railML3.3.

Electrification change

Purpose is macroscopic system change e.g. none vs overhead. See example in Network statement:

[https://networkstatement.banenor.no/doku.php?id=vedlegg:elek+trifiserte\\_linjer](https://networkstatement.banenor.no/doku.php?id=vedlegg:elek+trifiserte_linjer)

Can we use <electrificationSection>? We only need @contactLineType="none" or "overhead" on a macro level. But is correct use of <electrificationSection>? It seems to be of more microscopic use. Or can you mix macro and micro <electrificationSection>s?

In railML2.5 used: electrificationChange@type

<https://wiki2.railml.org/wiki/IS:electrificationChange>

Train protection system change

Purpose is macroscopic system change e.g. none vs ETCS. See example in Network statement:

<https://networkstatement.banenor.no/doku.php?id=vedlegg:syst>

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Can we use <trainProtectionElement>? Only need @trainProtectionSystem. Is it correct to use <trainProtectionElement> for change on macroscopic level?

In railML2.5 used: trainProtectionChange@trainProtectionSystem with values from TrainProtectionSystems.xml/trainProtectionSystemsAtTrack.

<https://wiki2.railml.org/wiki/IS:trainProtectionChange>

Operational rules

This element seems to be missing in railML3.

In railML2.5 used : <operatingRules> under <infrastructure>.

<https://wiki2.railml.org/wiki/IS:operatingRule>

Was decided to be under <common> in railML3? But is not implemented.

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Subject: Re: Missing attributes and maybe elements in railML3.2 for RTCI-a  
Posted by [christian.rahmig](#) on Wed, 18 Oct 2023 15:33:07 GMT

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Dear Torben,

thank you very much for your specific proposals on extending railML 3 data model w.r.t. RTCI use case requirements. Let me comment on them one by one:

(1) tunnel resistance

Adding the attributes @resistanceFactorPassenger and @resistanceFactorFreight to element <overCrossing> seems to be a straightforward adaptation of railML 3 data model [1]. However, it is only half of the solution railML 2.5 provides, where a tunnel resistance can also be calculated from wall material and tunnel cross-section. So, dear community, are you fine with just the tunnel resistance factors, or do you need wall material and tunnel cross-section, too?

(2) Electrification change

Electrification related parameters can be linked with the railway network (topology) by <electrificationSection> elements and their <\*Location> child elements. For microscopic modelling, you would most likely use <linearLocation>, but it is also possible to aggregate a bigger number of netElements with an <areaLocation> and thus define a certain electrification setting in a rather "macroscopic style". It is also possible to use <networkLocation> to link the electrification section with a complete network (level). So, you are very flexible here.

(3) Train protection system change

The concept for train protection system changes is similar to the electrification change issue in (2). Maybe, the term "trainProtectionSection" would be better than "trainProtectionElement" if we want to describe a certain train protection system setting in a rather macroscopic style. So, dear community, what do you think: do we need an <trainProtectionSection> in addition to a <trainProtectionElement> or shall we rename <trainProtectionElement> into <trainProtectionSection> or shall we leave everything as it is?

(4) Operational rules

This element is not part of railML 3.2 data model as it was not required by the use cases that have been implemented so far. So, if RTCI needs operational rules, we are free to extend the model with the most appropriate solution. Is there anyone from the community, who needs operational rules as well, and if so, for which use case?

Thank you very much and best regards  
Christian

[1] [https://www.railml.org/forum/index.php?t=msg&th=486&goto=1460&#msg\\_1460](https://www.railml.org/forum/index.php?t=msg&th=486&goto=1460&#msg_1460)

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Subject: Re: Missing attributes and maybe elements in railML3.2 for RTCI-a  
Posted by [Thomas Nygreen](#) on Thu, 07 Dec 2023 12:02:51 GMT  
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christian.rahmig wrote on Wed, 18 October 2023 17:33

(3) Train protection system change

The concept for train protection system changes is similar to the electrification change issue in (2). Maybe, the term "trainProtectionSection" would be better than "trainProtectionElement" if we want to describe a certain train protection system setting in a rather macroscopic style. So, dear community, what do you think: do we need an <trainProtectionSection> in addition to a <trainProtectionElement> or shall we rename <trainProtectionElement> into <trainProtectionSection> or shall we leave everything as it is?

To add some context for the community, railML 2 has both trainProtectionElement (for individual magnets etc.) and trainProtectionChange (for points where something about the system changes). These elements are syntactically quite similar, the main difference being that trainProtectionChange has an attribute to specify if the monitoring is intermittent, continuous or none at all. That same attribute is also present in the railML 3 element trainProtectionElement, so syntactically it has the capabilities of both the two elements from railML 2.

If we decide to use the same element for both purposes, I think we need a name that does not contain either Element or Section, as they both indicate a specific usage.

Best regards,  
Thomas

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Subject: Re: Missing attributes and maybe elements in railML3.2 for RTCI-a  
Posted by [Morten Torstensen](#) on Thu, 04 Jan 2024 12:41:05 GMT  
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We in Bane NOR need Operational rule references in order to do runtime calculations, because some rules affect the max allowed speed of trains in some cases. We should look into exactly how it should be modeled.

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