
Subject: SpeedChange : Protection system reference
Posted by [pierre.simon](#) on Wed, 04 Jul 2012 18:25:47 GMT
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In the Belgian railway, the speedChanges could be equipped with a protection system (crocodile).

We suggest to add a reference from <speedChange> to the <trainProtection> element.

[de: Es wird ein Attribut benoetigt, welches vom <speedChange> zum <trainProtectionElement> (BE: 'Krokodil' / DE: Gleismagnet) verweist.]

--

----- posted via PHP Headliner -----

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Thu, 05 Jul 2012 04:12:25 GMT
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Hello Pierre,

> In the Belgian railway, the speedChanges could be equipped with a
> protection system (crocodile).
>
> We suggest to add a reference from <speedChange> to the <trainProtection>
> element.
>
> [de: Es wird ein Attribut benoetigt, welches vom <speedChange> zum
> <trainProtectionElement> (BE: 'Krokodil' / DE: Gleismagnet) verweist.]

This reference from a <speedChange> to a <trainProtectionElement> is a useful innovation, which may be implemented with railML 2.2, because the reference attribute will be optional. However, is it really the <speedChange> that needs to refer to the <trainProtectionElement> or is it the signal, which is connected to the magnet or the Belgian crocodile?

Any comments appreciated...

Regards

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference
Posted by on Thu, 05 Jul 2012 13:47:26 GMT
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Dear Pierre and Christian,

we should not try to implement all cables or such which are in practice in the RailML or at least in Infrastructure scheme of RailML. Rather, we should as ourselves which function such a cross-reference should provide:

If there is a real and general function, we should implement the link. If there is no objective or general function, we should leave it as a special local case for adoption in local sub-schemes of RailML.

We should also consider the actual case as a property of RailML Interlocking Scheme.

In my opinion, the speed change sign and the <trainProtectionElement> have independent functions. (Of course they have the same origin or reason why they are there but: If there would be a speed change without <trainProtectionElement> or vice versa, each one would have to function alone.)

Both should be implemented as single elements may be with the same position (meter). A reading software can possibly expect that there should be a <trainProtectionElement> at or near the position of a <speedChange> but there is no _general_ (internationally accepted) necessity for that.

But if you decide to make that cross-reference anyway, as an optional attribute - what objection should one have?

With best regards,
Dirk.

Am 05.07.2012, 06:12 Uhr, schrieb Christian Rahmig
<coord@infrastructure.railml.org>:

> Hello Pierre,
>
>> In the Belgian railway, the speedChanges could be equipped with a
>> protection system (crocodile).
>>
>> We suggest to add a reference from <speedChange> to the
>> <trainProtection>
>> element.
>>

>> [de: Es wird ein Attribut benoetigt, welches vom <speedChange> zum
>> <trainProtectionElement> (BE: 'Krokodil' / DE: Gleismagnet) verweist.]
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> This reference from a <speedChange> to a <trainProtectionElement> is a
> useful innovation, which may be implemented with railML 2.2, because the
> reference attribute will be optional. However, is it really the
> <speedChange> that needs to refer to the <trainProtectionElement> or is
> it the signal, which is connected to the magnet or the Belgian crocodile?
>
> Any comments appreciated...
>
> Regards
>
> ---
> Christian Rahmig
> railML.infrastructure coordinator

--

Erstellt mit Operas revolutionärem E-Mail-Modul: <http://www.opera.com/mail/>

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Wed, 24 Oct 2012 13:48:02 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Pierre, Dirk and other railML users,

> This reference from a <speedChange> to a <trainProtectionElement> is a
> useful innovation, which may be implemented with railML 2.2, because the
> reference attribute will be optional. However, is it really the
> <speedChange> that needs to refer to the <trainProtectionElement> or is
> it the signal, which is connected to the magnet or the Belgian crocodile?

I added the request for an (optional) reference from a <signal> to a
<trainProtectionElement> as a comment to trac ticket [1].

[1] <https://trac.assembla.com/railML/ticket/173>

Regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference

Dear Christian, Dirk, Pierre and others,

Christian Rahmig <coord@infrastructure.railml.org> writes:

>> This reference from a <speedChange> to a <trainProtectionElement> is a
>> useful innovation, which may be implemented with railML 2.2, because the
>> reference attribute will be optional. However, is it really the
>> <speedChange> that needs to refer to the <trainProtectionElement> or is
>> it the signal, which is connected to the magnet or the Belgian crocodile?
>
> I added the request for an (optional) reference from a <signal> to a
> <trainProtectionElement> as a comment to trac ticket [1].
>
> [1] <https://trac.assembla.com/railML/ticket/173>

That's only one part of the idea.

There are also speed changes that are ensured by train protection elements, such as PZB-magnets. [1]

Sure, not all speed changes have such restrictions, it should be an optional addition to the current <speedChange> element.

Moreover there should be more than one such a reference to different <trainProtectionElement>s. The Germans use up to three magnets for one speed aspect. [1]

[1] <https://de.wikipedia.org/wiki/Geschwindigkeitspr%C3%BCfungsabschnitt>

Kind regards...
Susanne

--

Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: SpeedChange : Protection system reference
Posted by [Susanne Wunsch railML](#) on Wed, 24 Oct 2012 14:41:55 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Dirk, Christian, Pierre and others

Dirk Bräuer <dirk.braeuer@irfp.de> writes:

As Dirk Bräuer wrote:

> In my opinion, the speed change sign and the <trainProtectionElement>

> have independent functions.

No, they have a strong dependence. I think of the German "GPA".

> (Of course they have the same origin or reason why they are there but:
> If there would be a speed change without <trainProtectionElement> or
> vice versa, each one would have to function alone.)

Yes, they do function alone. But if you remove the speed panel, you have to remove or modify the magnets, too.

> Both should be implemented as single elements may be with the same
> position (meter).

Sure, they are already implemented this way.

> A reading software can possibly expect that there should be a
> <trainProtectionElement> at or near the position of a <speedChange>
> but there is no _general_ (internationally accepted) necessity for
> that.

I don't want the reading software to guess the above mentioned dependence between the <speedChange> and the <trainProtectionElement>. It may guess wrong! Maybe a train protection element is there for another reason than the speed aspect, e.g. a signal in the other direction.

Speed changes without such a link are surely the most common case and will stay like they are now.

Besides this, it could be, that there are other facilities to ensure the speed restriction than the above mentioned train protection elements, e.g. highly equipped video cameras or laser devices with other background systems? I don't know. We should leave an xs:any element there. ;-)

Kind regards...

Susanne

--

Susanne Wunsch

Schema Coordinator: railML.common

Subject: Re: SpeedChange : Protection system reference
Posted by [Carsten Weber](#) on Wed, 24 Oct 2012 15:32:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

"Susanne Wunsch" <coord@common.railml.org> schrieb im Newsbeitrag news:m14nlklz6n.fsf@cygnus.heep.sax.de...

> Dear Christian, Dirk, Pierre and others,

>

> Christian Rahmig <coord@infrastructure.railml.org> writes:

>> I added the request for an (optional) reference from a <signal> to a

>> <trainProtectionElement> as a comment to trac ticket [1].

>>

>> [1] <https://trac.assembla.com/railML/ticket/173>

>

> That's only one part of the idea.

>

> There are also speed changes that are ensured by train protection

> elements, such as PZB-magnets. [1]

>

Ok.

> Sure, not all speed changes have such restrictions, it should be an

> optional addition to the current <speedChange> element.

Ok.

>

> Moreover there should be more than one such a reference to different

> <trainProtectionElement>s. The Germans use up to three magnets for one

> speed aspect. [1]

>

> [1] <https://de.wikipedia.org/wiki/Geschwindigkeitspr%C3%BCfung>

(GPA) can also be caused by special situations inside of a station (e.g. missing overlap). It is also possible to have several GPA for one speed aspect if you need to check speed several times (e.g. S-Bahn-Tunnel in

you need more than one link between a speedChange and a train protection element. So in case of an GPA which "Magnet" should be linked? Or if you do it with balises or some thing else which might exist as a balise group and only a single balise? In such a case you need another structure for train protection elements. Otherwise the reading program has to guess whether the three magnets you linked are single magnets or a GPA. There should be a grouping element (= balise group, GPA, ...) which is linked from a speed aspect and some train protection elements which are linked to the grouping element.

For me it is not useful to have such a link between speed changes and train protection elements. There should be a tool which checks the speed steps and searches for a required train protection grouping element and checks the distances and all the other things around.

Best regards.

Carsten

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Sat, 27 Oct 2012 09:42:37 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Susanne and other railML users,

>> I added the request for an (optional) reference from a <signal> to a
>> <trainProtectionElement> as a comment to trac ticket [1].
>>
>> [1] <https://trac.assembla.com/railML/ticket/173>
>
> That's only one part of the idea.
>
> There are also speed changes that are ensured by train protection
> elements, such as PZB-magnets. [1]
>
> Sure, not all speed changes have such restrictions, it should be an
> optional addition to the current <speedChange> element.
>
> Moreover there should be more than one such a reference to different
> <trainProtectionElement>s. The Germans use up to three magnets for one
> speed aspect. [1]
>
> [1] <https://de.wikipedia.org/wiki/Geschwindigkeitspr%C3%BCfungsabschnitt>

How about turning the direction of reference resulting in the following scenario: The basis is provided by the <speedChange>. This speed change is an oriented point on the track. Signals (including panels) refer to the speed change and the same is done by train protection elements like magnets. And of course, several magnets as well as several signals can refer to the same speed change.

The disadvantage of this approach is the fact, that "child elements" refer to "parent elements" and it's difficult to collect all dependancies of a speed change.

If we want to avoid this turning of the reference direction, we will end up with the request for a more complex modellation of a <speedChange>. First, a speed change needs to refer to signals, announcing, executing or reminding the connected speed information. And second, a speed change needs to refer to train protection elements assuring the speed restriction. Plus the already implemented reference from a <speedChange> to a <speedProfile>, the speed change becomes more an "operational

element" instead of a "physical infrastructure object".

Any comments on this idea?

Regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Sat, 27 Oct 2012 09:57:42 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Carsten and other railML users,

>> Moreover there should be more than one such a reference to different
>> <trainProtectionElement>s. The Germans use up to three magnets for one
>> speed aspect. [1]
>>
>> [1] <https://de.wikipedia.org/wiki/Geschwindigkeitspr%C3%BCfabschnitt>
>
> I think you are looking for the wrong case. "Geschwindigkeitsprüfabschnitte"
> (GPA) can also be caused by special situations inside of a station (e.g.
> missing overlap). It is also possible to have several GPA for one speed
> aspect if you need to check speed several times (e.g. S-Bahn-Tunnel in
> Stuttgart from University station to "Schwabstraße"). This might be cases
> you need more than one link between a speedChange and a train protection
> element. So in case of an GPA which "Magnet" should be linked? Or if you do
> it with balises or some thing else which might exist as a balise group and
> only a single balise? In such a case you need another structure for train
> protection elements. Otherwise the reading program has to guess whether the
> three magnets you linked are single magnets or a GPA. There should be a
> grouping element (= balise group, GPA, ...) which is linked from a speed
> aspect and some train protection elements which are linked to the grouping
> element.

thank you very much for your remark about grouping the elements of a train protection facility. Indeed, for the case of "Geschwindigkeitsprüfabschnitte" (GPA) it is very useful to define a grouping element, which then refers to the single magnets. Currently, the <trainProtectionElement> resembles quite a macroscopic view and I would consider a GPA exactly as such a macroscopic train protection element. If not urgently needed, I would skip the more detailed modelling of train protection elements (magnets in particular) regarding railML 2.2.

Any comments appreciated...

Regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference
Posted by [Susanne Wunsch railML](#) on Thu, 01 Nov 2012 14:47:42 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Christian and others,

Christian Rahmig <coord@infrastructure.railml.org> writes:

```
>>> I added the request for an (optional) reference from a <signal> to a
>>> <trainProtectionElement> as a comment to trac ticket [1].
>>>
>>> [1] https://trac.assembla.com/railML/ticket/173
>>
>> That's only one part of the idea.
>>
>> There are also speed changes that are ensured by train protection
>> elements, such as PZB-magnets. [1]
```



```
> How about turning the direction of reference resulting in the
> following scenario: The basis is provided by the <speedChange>. This
> speed change is an oriented point on the track. Signals (including
> panels) refer to the speed change and the same is done by train
> protection elements like magnets. And of course, several magnets as
> well as several signals can refer to the same speed change.
>
> The disadvantage of this approach is the fact, that "child elements"
> refer to "parent elements" and it's difficult to collect all
> dependancies of a speed change.
>
> If we want to avoid this turning of the reference direction, we will
> end up with the request for a more complex modellation of a
> <speedChange>. First, a speed change needs to refer to signals,
> announcing, executing or reminding the connected speed
> information. And second, a speed change needs to refer to train
> protection elements assuring the speed restriction. Plus the already
> implemented reference from a <speedChange> to a <speedProfile>, the
> speed change becomes more an "operational element" instead of a
> "physical infrastructure object".
```

A "speed change" is anyway _no_ "physical infrastructure object".

There are some objections pro and con your reversed reference direction.
It depends on the current task of handling the data.

- * Referring all from the <speedChange> helps in all cases, where the speed change itself changes. Then you find all needed train protection elements and signals to change them the same way.
- * Referring from the trainProtectionElement and from the signal to the <speedChange> helps in all situations where you meet such a facility on a track and need to know which speed aspect is valid there.

I see no problem in a too complex speed change element because this models the real world in a good way. A speed change requires all these dependencies.

How would you describe it in a semantic model? I think we would add both relations: from the speedChange to the facilities (1:n) and back (1:1).

Why not to define both references like already done with the <connection> elements? That can be easily assured by special constraints. Both sights meet their requirements.

Any comments welcome...

Kind regards...
Susanne

--

Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: SpeedChange : Protection system reference
Posted by on Thu, 01 Nov 2012 15:40:35 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear all,

- > Why not to define both references like already done with the
- > <connection> elements? That can be easily assured by special
- > constraints. Both sights meet their requirements.

I would agree with that suggestion - despite it is redundancy.

But if we create such a cross-reference here, we should also answer the general question related with it:

- The redundancy which always lies in two cross-references has to be accepted.
- Each reference in RailML which is so far a simple one - one direction only - can be made to an optional cross-reference without discussion.

Is it possible to make cross-references optional in general? That means: It is not necessary to give both directions. If both directions are given, the special XML constrains secure that they there is no conflict between them.

Best regards,
Dirk.

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Fri, 09 Nov 2012 21:29:40 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Susanne and other railML users,

> A "speed change" is anyway _no_ "physical infrastructure object".

That's somehow true, but worth mentioning :)

- > How would you describe it in a semantic model? I think we would add both
- > relations: from the speedChange to the facilities (1:n) and back (1:1).
- >
- > Why not to define both references like already done with the
- > <connection> elements? That can be easily assured by special
- > constraints. Both sights meet their requirements.

That is a good idea you are bringing up here. From the <speedChange> to the facilities we have a 1:n relation as you correctly mentioned. But I am not sure about the 1:1 relation from the facility to the <speedChange>. Considering a signal, it may show different signal aspects, which relate to different <speedChange> elements then. If we want to implement the cross-reference at least on the same level, this would require to reference all (relevant) signal aspects from the <speedChange> and not the signals. This might get very big, I think.

However, it is a good idea. Regarding the running time until Zurich, I want to ask the important question: railML 2.2 or railML 2.x/3.0?

Regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference
Posted by [Christian Rahmig](#) on Sat, 10 Nov 2012 07:18:16 GMT
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Dear Dirk and other railML users,

- > Is it possible to make cross-references optional in general? That means:
- > It is not necessary to give both directions. If both directions are
- > given, the special XML constrains secure that they there is no conflict
- > between them.

The concept of referencing and cross-referencing is a wide-spread topic, which is enmeshed in many infrastructure elements. Therefore, I would like to see the reference inventory in the major release railML 3.0 and filed a trac ticket for it [1].

[1] <https://trac.assembla.com/railML/ticket/189>

Regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: SpeedChange : Protection system reference
Posted by on Sat, 10 Nov 2012 13:51:30 GMT
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Dear Christian,

- > But I am not sure about the 1:1 relation from the facility to the
- > <speedChange>. Considering a signal, it may show different signal
- > aspects, which relate to different <speedChange> elements then. If we
- > want to implement the cross-reference at least on the same level, this
- > would require to reference all (relevant) signal aspects from the
- > <speedChange> and not the signals.

Of course there may be 1:n relations from a <trackElement> to a <speedChange>. But this is mainly because of several speed profiles overlaying each other but rarely because of speed aspects of a signal.

There is normally a 1:1 relation only from one <trackElement> to one <speedChange> of one speed profile.

Main signals are not intended to create speed changes. Speed changes shall define the maximum permitted speed considered as "basic infrastructure property" - so the plainly physically permitted speed.

Main signals are intended to subset underlying speed profiles, so to (reduce) the permitted speed of the speed profiles. So, the actual permitted speed is the minimum of the speed of the profile and the main signals (minimum of last speed change and last main signal where appropriate).

The reasons why speed profiles and speed aspects of main signals are handled independently in practice are:

- 1) The origins for speed profiles are considered to be "pure physical infrastructure". The origins of speed aspects of main signals are considered to be "additional interlocking matters" - security of trains/vehicles against each other, routes through stations a. s. o.
- 2) A speed aspect of a main signal in general creates two speed changes: The beginning and the end of the speed reduction of the main signal. So, one would have to assign two speed changes to each speed aspect, which makes it a "1:n:2" relation. With a 1:n relation, one wouldn't know which beginning belongs to which end. Here we are in the interlocking scheme again, where we should leave it to be.
- 3) The positions of the theoretical speed changes of speed aspects cannot be (always) determined in advance. They depend on the situation. Normally, the beginning is fixed (but not necessarily at the signal as in Germany), but the position of the end is very complicated. It may depend on the route, the timetable, the train length and more. So, one wouldn't be able to refer speed changes in the current RailML semantics.

For RailML, please consider:

Speed profiles already have their "reasons" packed in the speed profile attributes. These speed aspects of main signals should have their "reasons" packed in interlocking structures. The interlocking reasons are either contrary or redundant to the reasons of the speed profile. In both cases there is no need to reference the speed change from the signal. (If contrary: Signal reduces the speed. If redundant: Signal corresponds to the speed change but we already know that from the speed profile reasons.)

So, please do not provide more redundancy as necessary. To create references from main signals to speed changes (for the rare cases that they correspond) redundant at least to the interlocking background and possibly also to the speed profile attributes.

If you plan to do so anyway, I would recommend to do it in a base type for all <trackElements> with a kind of enumeration (1:n). Main signals then inherit this enumeration from the base type - if they need it or not.

Hope I was able to clarify some background.

Best regards,
Dirk.

Subject: Re: SpeedChange : Protection system reference
Posted by [Susanne Wunsch railML](#) on Tue, 13 Nov 2012 10:25:33 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Dirk, Christian, and others,

Dirk Bräuer <dirk.braeuer@irfp.de> writes:

>> But I am not sure about the 1:1 relation from the facility to the
>> <speedChange>. Considering a signal, it may show different signal
>> aspects, which relate to different <speedChange> elements then. If
>> we want to implement the cross-reference at least on the same
>> level, this would require to reference all (relevant) signal
>> aspects from the <speedChange> and not the signals.
>
> Of course there may be 1:n relations from a <trackElement> to a
> <speedChange>. But this is mainly because of several speed profiles
> overlaying each other but rarely because of speed aspects of a signal.
>
> There is normally a 1:1 relation only from one <trackElement> to one
> <speedChange> of one speed profile.
>
> Main signals are not intended to create speed changes. Speed changes
> shall define the maximum permitted speed considered as "basic
> infrastructure property" - so the plainly physically permitted speed.

Thanks, Dirk, for focussing the discussion by clarifying some background.

We don't try to find a solution for signals/panels in this thread. It is more about a reference from speed changes to its "securing" train protection elements never mind if there are speed panels or signals at all. That may be ensured with magnets, crocodiles...

The remark by Carsten is of some importance, maybe we should create an intermediate container element that will be referred to for enabling grouping of train protection elements.

My proposal (speedChange -> trainProtectionElement, 1:n):

* Multiple references from 'speedChange' to certain "train protection group"s (regarding several "GPA"s at distinct positions along the announcement and execution way)

* New element 'trainProtectionGroup' with multiple, at minimum one, 'trainProtectionRef' element(s) for referring to single trainProtectionElements.

Alternatively (trainProtectionElement -> speedChange, 1:n):

* New element 'trainProtectionGroup' with multiple, at minimum one, 'trainProtectionRef' element(s) for referring to single trainProtectionElements.

* Multiple references from 'trainProtectionGroup' to certain 'speedChange's (regarding different speed profiles)

The first approach sounds more straight forward for me.

I hope to also clarified the focus of the RFE.

I filed a Trac ticket for this issue:

<http://trac.assembla.com/railML/ticket/199>

Kind regards...
Susanne

--

Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: SpeedChange : Protection system reference
Posted by on Tue, 13 Nov 2012 11:15:12 GMT
[View Forum Message](#) <> [Reply to Message](#)

Dear Susanne,

> We don't try to find a solution for signals/panels in this thread. It is
> more about a reference from speed changes to its "securing" train
> protection elements never mind if there are speed panels or signals at
> all.

Thank you for clarifying this, but it was Christian who brought the discussion on signals, not me.

>> Considering a signal, it may show different signal aspects, which
>> relate to different <speedChange> elements then.

I am not sure whether you can cancel Christians thoughts in that way. ;-)

So the question still is whether the very important differences between speedChanges and speedAspects should be "kept" anywhere, may be in Wiki. If I get the agreement I would write it into Wiki.

Concerning the reference speedChange <-> trainProtectionElement:

- I would agree with the way via a 'trainProtectionGroup'.
- I agree the direction speedChange --> trainProtectionGroup (1:n) --> trainProtectionElement (1:n) is the more reasonable one.
- Consider our discussion on cross-references in general: May be you want to introduce both directions from the beginning.

Dirk.
