Subject: speed profiles and braking percentages
Posted by on Thu, 26 Apr 2012 18:46:43 GMT
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Hello to all,

Susanne wrote:
> [minimum percentage of brake power]
>
> At some railway infrastructure companies the minimum percentage of
> brake power can't be directly calculated by means of physics. It is
> somehow defined by some legal body.
>
> Therefore we would suggest an additional attribute
> "minimumBrakePercentage" for this value in the <speedProfile> element.

Sorry: It _can_ always be "directly calculated by means of physics" but it is not done so because of arbitrariness... ;-)

Anyway, I know that there are such rules but it is not so easy at least from a theoretical point of view.

There is a strong physical relation between
- the braking distance of a train,
- the braking power of the train (brake percentage, deceleration - anyway in which unit),
- the gradient of the line at the braking distance,
- the current speed of the train.

By setting a "minimumBrakePercentage" to a <speedProfile> you skip the other two of the above named values.
Therefore, this implies the assumptions
- of the (maximum) braking distance being constant for all the route of the speed profile (which may be acceptable in many cases),
- of the gradient being constant for all the route of the speed profile
???

At least the last one is improbable and possibly a little bit too rough.
You may have a ruling gradient at a line but surely not a constant one.

This would mean that a train running a short section only (e. g. between two stations) of a speed profile does need the brake percentage of the steepest section of all the line even if it does not pass that steepest section?

A more proper solution would be:
There is a "minimumBrakePercentage" for each section of a speed profile between two places where trains can start or end (i. e. between two

stations).

However, I am aware that there are such "rough" rules in practice but I think that this is "not the complete truth". There are also rules which apply additionally to avoid that a train needs to run unnecessarily slow. May be these additional rules are not obvious or not shown in the fist place. To avoid mistakes which we can hardly correct only I would recommend to think about "sectional minimum brake percentage" rather than one for all the speed profile (which would lead to many many short speed profiles).

At least, for completeness: If we add a "minimumBrakePercentage" to <speedProfile> we also have to provide them with a brake type and a brake switch position (rail:tAirBrakeApplicationPosition). The same brake percentage can mean totally different braking power depending on the brake position (G or P,...).

Best regards,
Dirk.

Subject: Re: speed profiles and braking percentages
Posted by Susanne Wunsch railML on Thu, 26 Apr 2012 21:15:20 GMT
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Hello Dirk and others,

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

> Susanne wrote:
>> [minimum percentage of brake power]
>>
>> At some railway infrastructure companies the minimum percentage of
>> brake power can't be directly calculated by means of physics. It is
>> somehow defined by some legal body.
>>
>> Therefore we would suggest an additional attribute
>> "minimumBrakePercentage" for this value in the <speedProfile> element.

Thanks for your explanations.

> A more proper solution would be:
> There is a "minimumBrakePercentage" for each section of a speed
> profile between two places where trains can start or end
> (i. e. between two stations).

How about putting this attribute into the "speedChange"?

For sure, it messes up the code. :-(

But this allows for defining "sections of speed aspects" instead of
"lots of quite equal speed profiles".

> ---
> At least, for completeness: If we add a "minimumBrakePercentage" to
> <speedProfile> we also have to provide them with a brake type and a
> brake switch position (rail:tAirBrakeApplicationPosition). The same
> brake percentage can mean totally different braking power depending on
> the brake position (G or P,...).

Thanks again. That's a good point we should forseen.

--
Kind regards...
Susanne

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Sat, 22 Sep 2012 10:08:54 GMT
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Hello Susanne, Dirk and anyone interested,

>>> [minimum percentage of brake power]
>>>
>>> At some railway infrastructure companies the minimum percentage of
>>> brake power can't be directly calculated by means of physics. It is
>>> somehow defined by some legal body.
>>>
>>> Therefore we would suggest an additional attribute
>>> "minimumBrakePercentage" for this value in the <speedProfile> element.

>> A more proper solution would be:
>> There is a "minimumBrakePercentage" for each section of a speed
>> profile between two places where trains can start or end
>> (i. e. between two stations).
>
> How about putting this attribute into the "speedChange"?
>
> For sure, it messes up the code. :-(
>
> But this allows for defining "sections of speed aspects" instead of
> "lots of quite equal speed profiles".

If the attribute "minimumBrakePercentage" is directly coupled with the

speed information and only used for speed profile purposes, I agree to somehow implement it in connection with the <speedChange> element. But if we can think of other usages of the "minimumBrakePercentage" information, i prefer to put it in an extra element outside the <speedProfile>.

Therefore my question to everyone: Are there any other applications for the "minimumBrakePercentage" information, which are not connected to the speed of the train?

>> At least, for completeness: If we add a "minimumBrakePercentage" to
>> <speedProfile> we also have to provide them with a brake type and a
>> brake switch position (rail:tAirBrakeApplicationPosition). The same
>> brake percentage can mean totally different braking power depending on
>> the brake position (G or P,...).
>
> Thanks again. That's a good point we should forseen.

At the moment, within the ongoing implementation of trac ticket [1] for railML 2.2, we only defined the new attribute "minimumBrakePercentage" of type "tBrakePercentage" for a <speedProfile>. Depending on the comments on my above question, I would add the further attributes mentioned there.

[1] https://trac.assembla.com/railML/ticket/41

Regards

--
Christian Rahmig
railML.infrastructure coordinator

Subject: Re: speed profiles and braking percentages
Posted by on Tue, 02 Oct 2012 18:17:12 GMT
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Dear Christian,

> Therefore my question to everyone: Are there any other applications for
> the "minimumBrakePercentage" information, which are not connected to the
> speed of the train?

To avoid a misunderstanding: The "minimumBrakePercentage" _depends_ on the permitted speed! In one section of line, you have _many_ minimum brake percentages - one for each possible permitted speed (normally from 20 km/h until the maximum permitted speed in 5 km/h steps) and for each braking switch and for each direction.

So, it may not be possible to have "minimumBrakePercentage" information which are not connected to the (permitted) speed of the train.

>>> At least, for completeness: If we add a "minimumBrakePercentage" to
>>> <speedProfile> we also have to provide them with a brake type and a
>>> brake switch position (rail:tAirBrakeApplicationPosition).

> At the moment, within the ongoing implementation of trac ticket [1] for
> railML 2.2, we only defined the new attribute "minimumBrakePercentage"
> of type "tBrakePercentage" for a <speedProfile>.

Anyway - wherever you have an attribute "minimumBrakePercentage" you _must_ also have the connected brake type and position - otherwise nobody can know for which trains the "minimumBrakePercentage" applies.

I would strongly recommend not to make a half solution: Either you introduce minimum brake percentage, brake type and position or you introduce nothing.

Since we do know that we need the minimum brake percentages in practice, I would prefer to define all the necessary attributes now.

Best regards,
Dirk-

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Thu, 18 Oct 2012 14:06:40 GMT
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Dear Dirk and other railML users,

> Anyway - wherever you have an attribute "minimumBrakePercentage" you
> _must_ also have the connected brake type and position - otherwise
> nobody can know for which trains the "minimumBrakePercentage" applies.
>
> I would strongly recommend not to make a half solution: Either you
> introduce minimum brake percentage, brake type and position or you
> introduce nothing.

As described in the latest comment of trac ticket [1] I implemented the missing attributes: The attributes "brakeType" (values: 'G', 'P', 'R', 'N/A') and "airBrakeApplicationPosition" (values: 'none', 'compressedAir', 'handBrake', 'vacuum', 'parkingBrake', 'cableBrake') are used and combined in a container element <braking>. This container is a child element of <speedProfile>. As already mentioned by Susanne, it might be useful to put these braking information into the

<speedChange> element instead of the <speedProfile>.

Any comments appreciated...

[1] https://trac.assembla.com/railML/ticket/41

Regards

--
Christian Rahmig
railML.infrastructure coordinator

Subject: Re: speed profiles and braking percentages
Posted by on Thu, 18 Oct 2012 19:38:09 GMT
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Dear Christian,

> As described in the latest comment of trac ticket [1] I implemented the
> missing attributes: The attributes "brakeType" and
> "airBrakeApplicationPosition"
> are used and combined in a container element <braking>.

Thank you.

There are some attributes in that group which make no sense for speed profiles: regularBrakeMass, emergencyBrakeMass, max/meanDeceleration. They apply to vehicles and trains only. You have no mass at a speed profile. There may be (theoretically) a minimum necessary deceleration (representing the minimum brake percentage in a physical clear manner) but no max or mean deceleration.

I suggest to reduce the attributes to the real necessary minimumBrakePercentage, brakeType, and airBrakeApplicationPosition.

> As already mentioned by Susanne, it might be useful to put these braking
> information into the <speedChange> element instead of the <speedProfile>.

So why don't you move it? We have already discussed it on 29.06.2012 and 26.04.2012. Already then it was written: "So, I would prefer to add the above named triplet as attributes of a speed change: They are valid until the next speed change with such attributes."

Best regards,
Dirk.

Subject: Re: speed profiles and braking percentages
Posted by on Thu, 18 Oct 2012 19:42:30 GMT
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Dear Christian,

It seams to me that there are no attributes on whether a speed change is signalled and pre-signalled? Two boolean attributes would be needed. (Signalled: Is there any kind of sign at the place where the speed change applies? Pre-signalled: Is there any kind of sign at a proper pre-signalling distance before the place where the speed change applies?)

From such attributes, for instance, it depends whether a speed change is printed inversely in German drivers timetables.

Best regards,
Dirk.

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Wed, 24 Oct 2012 07:29:01 GMT
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Dear Dirk and other railML users,

> There are some attributes in that group which make no sense for speed
> profiles: regularBrakeMass, emergencyBrakeMass, max/meanDeceleration.
> They apply to vehicles and trains only. You have no mass at a speed
> profile. There may be (theoretically) a minimum necessary deceleration
> (representing the minimum brake percentage in a physical clear manner)
> but no max or mean deceleration.
>
> I suggest to reduce the attributes to the real necessary
> minimumBrakePercentage, brakeType, and airBrakeApplicationPosition.

Thank you for your remarks. By restructuring we now only define the attributes "brakeType", "airBrakeApplicationPosition" and "minimumBrakePercentage" (see [1]).

[1] https://trac.assembla.com/railML/ticket/41

Regards

--
Christian Rahmig
railML.infrastructure coordinator

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Wed, 24 Oct 2012 07:48:24 GMT
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Dear Dirk,

> It seams to me that there are no attributes on whether a speed change is
> signalled and pre-signalled? Two boolean attributes would be needed.
> (Signalled: Is there any kind of sign at the place where the speed
> change applies? Pre-signalled: Is there any kind of sign at a proper
> pre-signalling distance before the place where the speed change applies?)

If there is a sign at the place where the speed change applies, a
<signal> element might be placed. The only thing missing in that concept
at the moment is the reference from the <signal> to the <speedChange>.

In [1] the proposed attribute "signalised" for the <speedChange> has
been discarded after the discussion with the other coordinators on
September 10.

[1] https://trac.assembla.com/railML/ticket/41#comment:7

Regards

--
Christian Rahmig
railML.infrastructure coordinator

Subject: Re: speed profiles and braking percentages
Posted by Susanne Wunsch railML on Wed, 24 Oct 2012 08:04:33 GMT
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Dear Dirk, Christian and others

Christian Rahmig <coord@infrastructure.railml.org> writes:
>> It seams to me that there are no attributes on whether a speed change is
>> signalled and pre-signalled? Two boolean attributes would be needed.
>> (Signalled: Is there any kind of sign at the place where the speed
>> change applies? Pre-signalled: Is there any kind of sign at a proper
>> pre-signalling distance before the place where the speed change applies?)
>
> If there is a sign at the place where the speed change applies, a
> <signal> element might be placed. The only thing missing in that
> concept at the moment is the reference from the <signal> to the
> <speedChange>.
>
> In [1] the proposed attribute "signalised" for the <speedChange> has

> been discarded after the discussion with the other coordinators on
> September 10.
>
> [1] https://trac.assembla.com/railML/ticket/41#comment:7

There are an ongoing discussions about the speed panels in special [1] and panels in general [2] in other threads of this forum. That's the reason for discarding the attribute "signalised" from the <speedChange> element.

Kind regards...
Susanne

[1] http://www.railml.org/forum/ro/?group=1&id=149
[2] http://www.railml.org/forum/ro/?group=1&id=148

--
Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: speed profiles and braking percentages
Posted by on Wed, 24 Oct 2012 16:00:42 GMT
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Dear Christian,

in many countries we have to "highlight" or distinguish between line-side shown speed changes and such speed changes which are not shown (no signal panel and no main signal). The "highlighting" can be of very different kinds, for instance in Germany the non-presignalised speed changes have to be shown inverse.

> In [1] the proposed attribute "signalised" for the <speedChange> has
> been discarded after the discussion with the other coordinators on
> September 10.

Well: How should we describe (in RailML 2.2 ff.) whether a speed change is (pre-)signalised or not - so whether it has to be shown "highlighted" or not?

Will that be possible from RailML 3.0 on only?

Also, I want to point out that this is not only a matter of "describing infrastructure". It is also a matter of describing timetables, here especially Driver's Timetables. So let's imagine I have to transfer a kind of Driver's timetable from a planning software to an on-board system (EBuLa or such). Normally, I do not write much infrastructure in such

RailML files - normally not all track elements and only the really needed speeds.

Is it really the intention of RailML that, in such a case, I have to create "panel" track elements for most of the speed changes only to tell that they are not to be printed inversely?

Please take also into account: To know whether a speed change has to be "highlighted" I only have to know _whether_ it is (pre-)signalised or not - I do not need to know _where_ it is (pre-)signalised. To place a "panel" track element in the RailML file, I would have to know _where_ the speed change is (pre-)signalised. This is a special problem if the "highlight status" depends on the pre-signalisation ("announcementPanel" rather than the "executionPanel") - of course this is the more important panel since the driver virtually can do nothing if he arrives at a "reduce speed execution" panel without pre-signalisation...

Also, please take into account that between the "reduce speed announcement" panel and the "reduce speed execution" panel there may be points, especially trailing points (in contrary to facing points). So it can become very difficult for a reading software... to scan all possible routes leading to the speed change: If there is at least one route without pre-signalisation (where there is no announcement panel in a proper distance?) the speed change has to be shown inversely... I think this is not a practicable solution.

Rather, in my opinion the "is (pre-)signalised" attribute is a _status_ of a speed change - may be sometimes a somewhat indiscriminately assigned status which cannot always be deducted from the real infrastructure.

With best regards,
Dirk.

Subject: Re: speed profiles and braking percentages
Posted by Susanne Wunsch railML on Mon, 12 Nov 2012 09:55:56 GMT
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Dirk Bräuer <dirk.braeuer@irfp.de> writes:
>> In [1] the proposed attribute "signalised" for the <speedChange> has
>> been discarded after the discussion with the other coordinators on
>> September 10.

> Is it really the intention of RailML that, in such a case, I have to
> create "panel" track elements for most of the speed changes only to
> tell that they are not to be printed inversely?

If you know about the position of the announcement panels it is really

the above mentioned intention of the current railML implementation.

> Please take also into account: To know whether a speed change has to
> be "highlighted" I only have to know _whether_ it is (pre-)signalised
> or not - I do not need to know _where_ it is (pre-)signalised.

Thanks for pointing out, that description does currently not fit into
the implementation.

I filed a separate Trac ticket for this aspect in order to find a
solution for railML 2.2.

http://trac.assembla.com/railML/ticket/190

Kind regards...
Susanne

--
Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: speed profiles and braking percentages
Posted by Susanne Wunsch railML on Mon, 12 Nov 2012 11:16:28 GMT
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Dirk Bräuer <dirk.braeuer@irfp.de> writes:
>> As already mentioned by Susanne, it might be useful to put these
>> braking information into the <speedChange> element instead of the
>> <speedProfile>.
>
> So why don't you move it? We have already discussed it on 29.06.2012
> and 26.04.2012. Already then it was written: "So, I would prefer to
> add the above named triplet as attributes of a speed change: They are
> valid until the next speed change with such attributes."

I filed a Trac ticket for this issue in order to clarify it within
railML 2.2:

http://trac.assembla.com/railML/ticket/193

Kind regards...
Susanne

--
Susanne Wunsch
Schema Coordinator: railML.common

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Mon, 03 Dec 2012 19:58:38 GMT
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Hello Susanne and Dirk,

Am 12.11.2012 10:55, schrieb Susanne Wunsch:
> Dirk Bräuer <dirk.braeuer@irfp.de> writes:
> [...]
>> Please take also into account: To know whether a speed change has to
>> be "highlighted" I only have to know _whether_ it is (pre-)signalised
>> or not - I do not need to know _where_ it is (pre-)signalised.
>
> Thanks for pointing out, that description does currently not fit into
> the implementation.
>
> I filed a separate Trac ticket for this aspect in order to find a
> solution for railML 2.2.
>
> http://trac.assembla.com/railML/ticket/190

The boolean parameter "signalised" has been re-introduced for the
<speedChange> element as it fulfills the needs mentioned above.

Regards

--
Christian Rahmig
railML.infrastructure coordinator

Subject: Re: speed profiles and braking percentages
Posted by Christian Rahmig on Tue, 08 Jan 2013 15:06:06 GMT
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Dear Susanne, Dirk and other railML users,

Am 12.11.2012 12:16, schrieb Susanne Wunsch:
> Dirk Bräuer <dirk.braeuer@irfp.de> writes:
>>> As already mentioned by Susanne, it might be useful to put these
>>> braking information into the <speedChange> element instead of the
>>> <speedProfile>.
>>
>> So why don't you move it? We have already discussed it on 29.06.2012
>> and 26.04.2012. Already then it was written: "So, I would prefer to
>> add the above named triplet as attributes of a speed change: They are
>> valid until the next speed change with such attributes."
>

> I filed a Trac ticket for this issue in order to clarify it within
> railML 2.2:
>
> http://trac.assembla.com/railML/ticket/193

after certain discussions I decided to leave the braking attributes in the element <speedProfile>. This way, the speed profile is valid for a train fulfilling the specified braking configuration. For another train with a different braking configuration, a new speed profile needs to be defined.

Regards

--
Christian Rahmig
railML.infrastructure coordinator
