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Subject: odometry, pos and absPos

Posted by [bob.janssen](#) on Mon, 08 Dec 2014 14:30:23 GMT

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Dear all,

ETCS operation relies on precise odometry. Engineers will want to use RailML positions of balises, points and other track elements to compute speedprofiles, balise-profiles, etc. This information is vital.

Geographic coordinates are of little use for this purpose. Much rather, the pos and absPos attributes of many IS elements are useful.

These elements therefore deserve a thorough definition and here's my proposal:

pos: the length of track, measured along the track's centreline from <trackBegin>. To be used for vital purposes such as train odometry.

absPos: a mileage, or kilometrage, typically displayed alongside the track, that supports positioning e.g. for maintenance purposes but not for vital or signalling purposes.

Yours,  
Bob Janssen

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

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Subject: Re: odometry, pos and absPos

Posted by \_\_\_\_\_ on Mon, 08 Dec 2014 23:44:10 GMT

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Dear Bob Janssen,

for pos and absPos, we use the following definitions so far:

> Due to historical reasons, the mileage (or "metering") of the tracks of a line often is not continuous. It can have any points of discontinuity ("jump" and/or change of counting direction between raising and falling) for instance by geographical corrections / repositioning of a line. In railML, the practical, historical mileage (written e.g. at mileposts) is named "absolute mileage". On the contrary, there is the "relative mileage" (attribute pos) which always has to be continuously raising (but not necessarily starting with zero). The relative mileage normally is virtual, i.e. not visible at stations or mileposts. To calculate distances, the relative mileage is used.

(Translated extract from:)

<http://www.wiki.railml.org/index.php?title=IS:mileageChange# Notes>

So far: No objections against your definitions.

From the requirements of <timetable> there is probably no such 'exactness' necessary as for precise odometry. One could think that this is not a problem.

However, we have to be careful. You write "measured along the track's centreline". This would lead to different /pos/ values for both <track>s of a double-track line. Most timetabling applications probably assume the same distances for both tracks of a double-track line. From my opinion, this distance is measured along the centre of a \_line\_ which is the centre between both tracks in case of a double-track line.

So, if you really need a distance measured in the centre of each track independently from its line, we possibly need three position values:

- one for the absolute (traditional, discontinuous) mileage = absPos,
- one for the relative distances along the centre of a track,
- one for the relative distances along the centre of a line or group of tracks.

I would welcome if this would not be necessary but instead we could use the same definitions (and existing attributes) for all purposes.

Best regards,  
Dirk Bräuer.

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Subject: Re: odometry, pos and absPos  
Posted by [bob.janssen](#) on Thu, 11 Dec 2014 13:23:53 GMT  
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Hello Dirk,

thanks for your enlightening reply. From your mail, I now understand your use of mileage of a double-track line for the purpose of time-tabling; fair enough.

From the point of view of signalling and train protection, we need distances travelled along individual tracks, e.g. ETCS relies on exact distances between balises, section limits and the like.

I was inspired by the definition of pos from IS:trackend which reads "pos ... defined by the "real" length of the track as distance from the trackBegin regardless the "absolute mileage".

I suggest that the position of objects irrelevant to time tabling are measured relative to trackBegin. In particular, the definitions of attributes pos in elements balise, traindetectors, signals, would need to

be completed accordingly.

Yours,  
Bob Janssen

Dirk Briç½uer wrote:

- >
- > Dear Bob Janssen,
- >
- > for pos and absPos, we use the following definitions so far:
- >
- >> Due to historical reasons, the mileage (or "metering") of the tracks of a line often is not continuous. It can have any points of discontinuity ("jump" and/or change of counting direction between raising and falling) for instance by geographical corrections / repositioning of a line. In railML, the practical, historical mileage (written e.g. at mileposts) is named "absolute mileage". On the contrary, there is the "relative mileage" (attribute pos) which always has to be continuously raising (but not necessarily starting with zero). The relative mileage normally is virtual, i.e. not visible at stations or mileposts. To calculate distances, the relative mileage is used.
- >
- > (Translated extract from:)
- > <http://www.wiki.railml.org/index.php?title=IS:mileageChange# Notes>
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- > So far: No objections against your definitions.
- > From the requirements of <timetable> there is probably no such
- > 'exactness' necessary as for precise odometry. One could think that this
- > is not a problem.
- >
- > However, we have to be careful. You write "measured along the track's
- > centreline". This would lead to different /pos/ values for both <track>s
- > of a double-track line. Most timetabling applications probably assume
- > the same distances for both tracks of a double-track line. From my
- > opinion, this distance is measured along the centre of a \_line\_ which is
- > the centre between both tracks in case of a double-track line.
- >
- > So, if you really need a distance measured in the centre of each track
- > independently from its line, we possibly need three position values:
- > - one for the absolute (traditional, discontinuous) mileage = absPos,
- > - one for the relative distances along the centre of a track,
- > - one for the relative distances along the centre of a line or group
- > of tracks.
- >
- > I would welcome if this would not be necessary but instead we could use
- > the same definitions (and existing attributes) for all purposes.
- >
- > Best regards,

> Dirk Brückner.

>

>

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

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Subject: Re: odometry, pos and absPos

Posted by [Christian Rahmig](#) on Mon, 09 Feb 2015 14:17:00 GMT

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Dear Bob and Dirk,

Am 11.12.2014 um 14:23 schrieb Bob Janssen:

> [...]

>

> I suggest that the position of objects irrelevant to time tabling are  
> measured relative to trackBegin. In particular, the definitions of  
> attributes pos in elements balise, traindetectors, signals, would need to  
> be completed accordingly.

>

> [...]

thank you for your input. I tried to clarify the definitions for pos and absPos in the railML wiki, e.g. see [1]. If you have any further remarks or questions, please let me know...

[1] <http://wiki.railml.org/index.php?title=IS:trackEnd>

Best regards

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Christian Rahmig  
railML.infrastructure coordinator

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