
Subject: Topologie-Stichtag / Topology reference date
Posted by on Wed, 02 Nov 2016 10:34:14 GMT
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Hallo zusammen

Dies ist mein erster Post im railML Forum. Herr Kolmorgen hat mich darüber informiert, dass es üblich ist sich dabei erst kurz vorzustellen. Mein Name ist Mico Micic und ich bin Solution/Software Architect bei der SBB-IT. Ich arbeite für die Trassenplanungssoftware "NeTS". NeTS ist die nationale Software der Schweiz für die Trassenbestellung sowie Trassenplanung welche von der SBB und BLS genutzt wird.

Nun meine Frage:

Im Rahmen des Projekts „PAIP“ wird untersucht, ob wir railML 2.3 für den Austausch von Trassendaten für interne Applikationen nutzen können. Wir sind dabei auf folgendes Problem gestossen:

In der aktuellen Planungssoftware der SBB kann eine Trasse mehrere sogenannte Topologie-Stichtage haben. Damit wird bestimmt, ab welchem Tag im Jahr die Trasse welchen Topologie-Stand referenziert. Beispiel: Vom 10. Januar bis 1. August gilt eine andere Topologie als ab 1. August bis Ende des Jahres.

|-----|-----|-----|
Start Fahrplan. Stichtag 10. Jan ----->Stichtag 1. Aug ----->Ende FP

Im RailML 2.3 haben wir aktuell keine Möglichkeit gefunden, die beschriebenen Stichtage abzulegen. Gibt es dazu Ideen? Hat das Problem jemand schon gelöst? Gibt es Ideen, wie man diese Information als Extension einfügen könnte?

Vielen Dank

Dear all,

This is my first post in the RailML forum. Mr. Kolmorgen informed me that it is usual to introduce himself. My name is Mico Micic and I am solution/software architect at SBB-IT. I work for the train planning software "NeTS". NeTS is the Switzerland's national software for the train reservation / ordering and train planning used by SBB and BLS.

Now my question:

As part of the project "PAIP" we are investigating whether we can use railML 2.3 for the timetable data exchange between internal applications. During the first analysis we have encountered the following problem:

In the SBB internal train planning software, each train can have multiple so-called "topology reference dates". These reference dates defines from which day of the year which topology state / revision is referenced. Example: From 10 January to 1 August, a different topology applies than from 1 August to the end of the year.

```
|-----|-----|-----|
Start Timetable per. Ref. Date 10. Jan ----->Ref. Date 1. Aug ----->End Timetable per.
```

We could not find a way to describe these reference days in RailML 2.3. Are there any ideas? Has someone already implemented a solution for this problem? Are there any ideas about how to add this information as extension?

Thanks a lot!

Mico

--

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Subject: Re: Topologie-Stichtag / Topology reference date
Posted by [christian.rahmig](#) on Tue, 08 Nov 2016 04:57:07 GMT
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Hallo Mico,

Am 03.11.2016 um 14:11 schrieb Mico Micic:
> Dies ist mein erster Post im railML Forum. [...]

Willkommen im Forum!

- > Im RailML 2.3 haben wir aktuell keine Möglichkeit gefunden,
- > die beschriebenen Stichtage abzulegen. Gibt es dazu Ideen?
- > Hat das Problem jemand schon gelöst? Gibt es Ideen, wie man
- > diese Information als Extension einfügen könnte?

Als railML-Infrastruktur-Schemenkoordinator möchte ich gern meinen Teil zur Antwort beisteuern: In der Tat gibt es im aktuellen railML 2.3 keine Möglichkeit, einen zeitlichen Verlauf der Streckentopologie abzubilden. Das Problem ist komplex und wird unter dem Titel "Time Dimension" momentan ausführlich für railML Version 3 und RailTopoModel untersucht. Neben der Abbildung von Gültigkeiten ("Welche Topologie ist an einem bestimmten Tag verfügbar") sollen auch Planungsvarianten und die anderen Phasen aus dem Infrastruktur-Lebenszyklus adressiert werden. Wenn Sie vor dem Erscheinen von railML v3 bereits an einer Lösung Ihrer Aufgabe interessiert sind, empfehle ich Ihnen den Kontakt mit der RailTopoModel Expert Group, z.B. über die Foren-Newsgruppe "RailTopoModel". Sicherlich lassen sich die Ideen im Rahmen einer Schema-Extension auch im aktuellen Modell einpflegen.

- > In the SBB internal train planning software, each train can
- > have multiple so-called "topology reference dates". These
- > reference dates defines from which day of the year which
- > topology state / revision is referenced. Example: From 10
- > January to 1 August, a different topology applies than from
- > 1 August to the end of the year.
- > [...]
- > We could not find a way to describe these reference days in
- > RailML 2.3. Are there any ideas? Has someone already
- > implemented a solution for this problem? Are there any ideas
- > about how to add this information as extension?

Indeed, current railML v2.3 does not provide a solution for different time validities of topology. This task is very complex and currently it is being analyzed by the RailTopoModel Expert Group in preparation of the upcoming railML version 3. Except the possibility to model validities ("Which topology is valid on a given day"), the new approach shall be able to cope with variants of planned topology and the other phases of the infrastructure lifecycle. If you are interested in a solution before the official release of railML v3, please contact the RailTopoModel Expert Group, e.g. via the forum's newsgroup "RailTopoModel". I am sure that these ideas may be implemented in form of a schema extension even in the current railML model.

Best regards

--

Christian Rahmig
railML.infrastructure coordinator

Subject: Re: Topologie-Stichtag / Topology reference date

Posted by [Philip Wobst](#) on Tue, 08 Nov 2016 16:23:31 GMT

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Hello Mico,

welcome from my side as well - I will limit my answer to the English version and I hope this is fine for you. As Christian has outlined there is no time dimension for the infrastructure in railML 2.3. Which infrastructure references in the timetable data export is affected by the topology reference date (e.g. ocpRef, trackRef, sectionTT, platformEdgeRef, stopPostRef)?

Best regards,

Philip

--

Philip Wobst
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Dresden; Germany www.railml.org

Subject: Re: Topologie-Stichtag / Topology reference date

Posted by _____ on Tue, 22 Nov 2016 07:18:34 GMT

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Hello everyone,

sorry for my late answer.

In the SBB data model, the topology reference dates are defined directly on the train itself because they are globally valid. These mean that multiple topology dates have been used for all referenced infrastructure elements at the moment the train was planned.

Example: At the beginning of 2016, a new train is planned for the whole operation period in 2016 (every day in the year). At this time, the topology reference date is 01.01.2016. It is already known, however, that the topology will change on 01.06.2016. Thus, another topology reference date is set for the 01.06.2016. In this case, the topology from 01.01.2016 is used for e.g. train runtime calculation for the first half-year.

In RailML, that would mean that we have to add a list of dates to the <train> element. Something like that:

```
<!-- Trasse: T16321-001 -->
<train id="train-trasse-16321-001"
      code="T16321-001"
      type="operational"
      trainNumber="16321"
```

```
additionalTrainNumber="1"
cancellation="false"
processStatus="actual"
description="BnMuebD">
```

```
<my:topologyReferenceDates>
  <my:referenceDate>2016-01-01</my:referenceDate>
  <my:referenceDate>2016-06-01</my:referenceDate>
</my:topologyReferenceDates>
```

```
...
...
```

```
</train>
```

Best regards,
Mico

Subject: Re: Topologie-Stichtag / Topology reference date
Posted by on Mon, 27 Feb 2017 10:29:33 GMT
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Hello everyone!

As discussed at the last timetable developer meeting (19th January), the topology reference should be described in a generic way. It should also be possible to make a reference to a topology version and not only the topology date. The reference type as well as the reference content is defined by the underlying topology model and provided by the exporting system. For this purpose, something like the OCP designator construct should be used.

Here is the next proposal for the timetable.xsd:

```
<xs:complexType name="eTrainPartSequence">
  <xs:complexContent>
    <xs:extension base="rail:tTrainPartSequence">
      <xs:sequence>
        ...
        <xs:element name="topologyReference"
          type="rail:tTopologyReference"
          minOccurs="0"
          maxOccurs="unbounded">
          <xs:annotation>
            <xs:documentation source="http://wiki.railml.org/..."/>
          </xs:annotation>
```

```

    </xs:element>
    ...
  </xs:sequence>
</xs:extension>
</xs:complexContent>
</xs:complexType>

```

and the corresponding definition for the complex type "tTopologyReference" in timetableTypes.xsd:

```

<xs:complexType name="tTopologyReference">
  <xs:attribute name="topologyModel" type="xs:string" use="required">
    <xs:annotation>
      <xs:documentation>name of the referenced topology model, e.g.
UNO</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="reference" type="xs:string" use="required">
    <xs:annotation>
      <xs:documentation>the reference in the specified topology model. The reference may
be a version, name, date or any other string identifying a specific topology within the topology
model.</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attributeGroup ref="rail:aTimePeriod">
    <xs:annotation>
      <xs:documentation>the time period when the referenced topology is
valid</xs:documentation>
    </xs:annotation>
  </xs:attributeGroup>
  <xs:attributeGroup ref="rail:anyAttribute">
    <xs:annotation>
      <xs:documentation>provide an extension point for non-railML attributes in foreign
namespace</xs:documentation>
    </xs:annotation>
  </xs:attributeGroup>
</xs:complexType>

```

Best regards,
Mico

Subject: Re: Topologie-Stichtag / Topology reference date

Posted by [Philip Wobst](#) on Thu, 02 Mar 2017 11:41:38 GMT

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Hello Mico,

your changes corresponds to the implementation that we discussed in January in Dresden. What we have missed to document is that it is possible to provide more than one reference to the same 'register' if these are limited by startDate/endDate accordingly.

Based on the example in your first post I believe you would provide the application dates for each topology via the startDate/endDate:

```
<topologyReference topologyRegister="UNO" entry="170101" startDate="2017-01-01"
endDate="2017-06-01"/>
```

```
<topologyReference topologyRegister="UNO" entry="170601" startDate="2017-06-01"/>
```

However, looking at this further I have the following question to you and the other TT developers: Is there a use case where this information would change from one trainpartSequence to the next? If not, why not provide this information as a 'train property' instead?

Best regards,

Philip

Subject: Re: Topologie-Stichtag / Topology reference date

Posted by _____ on Mon, 06 Mar 2017 18:49:12 GMT

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Hi Philip

Thank you for the feedback! My understanding was also that there should be only one valid topologyReference for each register. But: In the case of the SBB, we could also write the reference date(s) in the attribute "entry". Something like that:

```
<topologyReference topologyRegister="UNO" entry="20170101,20170601"/>
```

In this case, we would no use the start and end date attributes. Other topology register may use the "entry" attribute to refer to a topology version. Example for two versions where the first one is valid from 2017-01-01 to 2017-06-01 and the second one from 2017-06-01:

```
<topologyReference topologyRegister="XYZ" entry="v1005" startDate="2017-01-01"
endDate="2017-06-01"/>
```

```
<topologyReference topologyRegister="XYZ" entry="v1006" startDate="2017-06-01"/>
```

Both ways would be suitable for us.

Best regards,
Mico

Subject: Re: Topologie-Stichtag / Topology reference date
Posted by [Philip Wobst](#) on Fri, 17 Mar 2017 08:00:22 GMT
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Dear all,

the corresponding TRAC ticket 306 has been created. We will continue with the discussion next week in Berne.

Best regards,

Philip

Subject: Re: Topologie-Stichtag / Topology reference date
Posted by on Mon, 20 Mar 2017 13:59:50 GMT
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Am 17.03.2017 um 09:00 schrieb Philip Wobst:

> Dear all,
>
> the corresponding <https://trac.railml.org/ticket/306#ticket>
> has been created. We will continue with the discussion next
> week in Berne.
>
> Best regards,
>
> Philip

Hi,

the topologyReference for me is just another designator.
So why don't we use the rail:tDesignator type for the element?

Best regards,
Leopold

Subject: Re: Topologie-Stichtag / Topology reference date
Posted by on Mon, 20 Mar 2017 15:07:59 GMT
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Am 20.03.2017 um 15:22 schrieb Leopold KÜhschelm:
> Am 17.03.2017 um 09:00 schrieb Philip Wobst:
>> Dear all,
>>
>> the corresponding <https://trac.railml.org/ticket/306#ticket>
>> has been created. We will continue with the discussion next
>> week in Berne.
>>
>> Best regards,
>>
>> Philip
>
> Hi,
>
> the topologyReference for me is just another designator.
> So why don't we use the rail:tDesignator type for the element?
>
> Best regards,
> Leopold
>

Hi,

the topologyReference for me is just another designator.
So why don't we use the rail:tDesignator type for the element?

Regards,
Leopold

Subject: Re: Topologie-Stichtag / Topology reference date
Posted by on Mon, 03 Apr 2017 07:34:57 GMT
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Hi everyone,

as discussed at the last timetable developer meeting the solution for the topology reference will be something like the OCP designator but with a new register for the topology databases. Here is the register entry for the SBB "UNO" topology database:

```
<register code="UNO">  
  <name xml:lang="de-CH">Zentrale Topologiedatenbank für Bahnsysteme</name>  
  <name xml:lang="fr-CH">Base de données centrale pour la topologie des systèmes
```

ferroviaires</name>
<name xml:lang="it-CH">Banca dati topologica per sistemi ferroviari</name>
<name xml:lang="en">Central topology database for railway systems</name>
<organization xml:lang="de-CH">Schweizerische Bundesbahnen im Auftrag des Bundesamtes
für Verkehr</organization>
<organization xml:lang="fr-CH">Chemins de fer fédéraux suisses par ordre Office
fédéral des transports</organization>
<organization xml:lang="it-CH">Ferrovie Federali Svizzere su incarico Ufficio federale dei
trasporti</organization>
<organization xml:lang="en">Swiss Federal Railways on behalf of Federal Office of
Transport</organization>
</register>

Best regards,
