Subject: Time Relations of Infrastructure and External References via <any> Attribute
Posted by Tobias Bregulla on Tue, 20 Jun 2017 08:27:58 GMT
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Dear railML infrastructure community,

our software GPSinfradat is an integrated hard- and software solution for GNSS- and video based infrastructure survey of railways. This hardware is combined by a tailor-made software suite from an in-house development with a certified railML 2.2 and 2.3 export interface.

For our application we are currently missing a central aspect in the model: the time. In particular, we want to specify for each infrastructure element the time when it has been recorded by our system and the relation to the corresponding video picture. Although this seems to be a very specific problem, it relates to a more generic topic to be discussed: the introduction of a more complex time dimension model within railML®.

Therefore, we propose having a generic solution, which can be adopted by other applications / use cases, too. We currently can formulate the following requirements for our application:
- Recording of time with millisecond accuracy
- Absolute time stamps following the UTC time
- Relative time in form of seconds since start of recording

The following reduced example of a signal shows how we imagine to see it implemented in railML:
```
<signal id="si01" >
   <times>
     <time id="si01_t01" date="2017-05-24" utcTime="09:30:10.320Z" relTime="32.812"
type="survey" gpsinfradat:SurveyRefID="c134f4a0-6085-48f4-a3e4-79daa2305e78">
   </times>
</signal>
```
The type shall be used to define different kinds of timestamps, e.g. "validFrom", "validTo", "updated", "modified" etc. The time values itself can be of type xs:date (date), xs:time (utcTime) and xs:nonNegativeInteger (relTime).

@railML community:
 Do you have similar requirements? Do you have any special constraints how to model time aspects? Do you know about other types of modelling (OpenStreetMap or others)?
Further, we would like to reference an external data source with our recordings. In particular, it should be possible to reference a video file with the <track> element. Though we think that this is a very specific request to be most probably realized in a schema extension, we want to share our proposal with you:
```
<track id="tr01" ... >
   <trackTopology>
     ...
   </trackTopology>
   <gpsinfradat:survey id=c134f4a0-6085-48f4-a3e4-79daa2305e78
startTime="2017-05-30T09:30:10.320Z">
     <gpsinfradat:video id=ad0c3743-281d-44ee-97ec-24778981967b type="front"
```

```
        fileRef="\customer\project\video01.mp4"/>
        <gpsinfradat:gnss id=bd0c3743-281d-44ee-97ec-24778981967b type="rawSatellite"
fileRef="\customer\project\video01.gnssraw"/>
        <gpsinfradat:video id=42b739b7-1176-4681-b940-994bb9a77038 type="front"
fileRef="\customer\project\video01.mp4"/>
        <gpsinfradat:gnss id=4916e3bd-5568-40a0-9cb6-5a2926c1eb30 type="matched"
fileRef="\customer\project\video01.gnsscrypt"/>
    </gpsinfradat:survey>
</track>
```

@railML community:

 Does anyone have similar requirements? Are there other members in the railML community who used the terms
above in another meaning? Whats your opinion about shortening of tags ("videoRef" instead "videoReference") in the railML syntax?

Best regards,

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