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Subject: Re: railML 2.3 infrastructure extension proposal route information at signal  
Posted by [Joerg von Lingen](#) on Fri, 24 Aug 2018 08:57:02 GMT

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Dear Torben,

thanks for your extensive proposal. Within railML3.x IL we have the possibility to define train routes:

```
<rail3:knowsRoute name="Route_68N1_69A" id="rt_sig02_sig04" locksAutomatically="false"
delayForLock="PT1S">
  <rail3:handlesRouteType ref="rt_main"/>
  <rail3:isActivatedBy name="activation Route_68N1_69A" id="rt_act01" delayForLock="PT2S"
  automaticReleaseDelay="PT5S">
    <rail3:activationSection ref="A02T"/>
  </rail3:isActivatedBy>
  <rail3:requiresPointInPosition name="pt01 in left" id="rp_pt_swi01_li" inPosition="left"
  xsi:type="rail3:SwitchPointAndPosition">
    <rail3:refersToPoint ref="pt_swi01"/>
  </rail3:requiresPointInPosition>
  <rail3:routeEntry name="Start 68N1" id="rts_68N1">
    <rail3:refersTo ref="mb_sig02"/>
    <rail3:nonReplacement ref="A68W02T"/>
  </rail3:routeEntry>
  <rail3:hasReleaseGroup ref="prt02"/>
  <rail3:hasReleaseGroup ref="prt03"/>
  <rail3:hasReleaseGroup ref="prt04"/>
  <rail3:hasReleaseGroup ref="prt05"/>
  <rail3:hasReleaseGroup ref="prt06"/>
  <rail3:routeExit name="Dest 69A" id="rtd_69A">
    <rail3:refersTo ref="ls_sig04"/>
    <rail3:hasDangerPoint ref="dp01" />
    <rail3:hasOverlap ref="ov01" />
  </rail3:routeExit>
</rail3:knowsRoute>
<rail3:knowsOverlap name="Overlap 69A-P2" id="ov01" overlapValidityTime="PT60S"
speedInOverlap="0.0">
  <rail3:activeForApproachRoute ref="rt_sig02_sig04"/>
  <rail3:requiresAssetInPosition mustOrShould="should" proving="oneOff">
    <rail3:relatedAssetAndState xsi:type="rail3:SwitchPointAndPosition" inPosition="left">
      <rail3:refersToPoint ref="pt_swi02" />
    </rail3:relatedAssetAndState>
  </rail3:requiresAssetInPosition>
  <rail3:isLimitedBy ref="tde07"/>
  <rail3:overlapRelease name="ov01 Release" id="ov01_rl">
    <rail3:releaseTriggerSection ref="X02T"/>
    <rail3:overlapReleaseTimer timer="PT60S"
overlapReleaseCondition="startTimerUponOccupation" />
  </rail3:overlapRelease>
```

</rail3:knowsOverlap>

Route topology

@name [datatype: string] for example "A-1-L"

# Route name with @name

@routeEntry [datatype: ref to the <signal> starting the route]

# Route entry with <RouteEntry>

@routeExit, [all datatype: ref to any element ending the route usually a signal]

# Route exit with <RouteExit>

@routeVia/@switchAndPosition

# Route path definition with <requiresPointInPosition>

@setTime [datatype: time in seconds]

# Route name with @delayForLock

Speed profile(s) for the route

@proceedSpeed [datatype: integer in km/h]

# Speed for route in <aspectRelation> with @Vexpecting and @Vpassing

# additional reference to infrastructure with <signalsSpeedProfile> in <aspectRelation>

@releaseSpeed [datatype: integer in km/h]

# per signal @releaseSpeed

@approachSpeed [datatype: integer in km/h]

# per signal @approachSpeed

@approachPoint

# Route activation with reference in <activationSection>

Overlap in connection with the route

@overlapRef.

# Reference for route in <hasOverlap>

@overlapValidityTime [datatype: time in seconds]

# for <Overlap> in @overlapValidityTime

@speedInOverlap

# for <Overlap> in @speedInOverlap

@overlapReleaseTimer [datatype:ref]

# for <OverlapRelease> in <overlapReleaseTimer>

@overlapReleaseTimerHead [boolean]

# for <OverlapRelease> with combination of <releaseTriggerSection> and

@overlapReleaseCondition

Thus all items can be modelled in railML3.x

Regards,  
Jörg von Lingen - Interlocking scheme coordinator

Torben Brand wrote on 02/03/2017 16:20:

- > Dear railML infrastructure forum,
- > This posting contains the discussion to an extension towards
- > the Signal
- > For use case and naming conformity I refer to the topic
- > "railML 2.3 infrastructure extension for capacity planning
- > and network statement usecases".
- > We need a simple route description for capacity modeling
- > purposes. I see this as not yet interlocking, but a simple
- > list of route attributes.
- > The extended route attributes are placed in the <NO:route>
- > element under the signal that forms its starting position.
- > There can be multiple <NO:route> elements under one <signal>
- > element. There is one route element per route starting from
- > the signal.
- > The new extended attributes are:
- >
- > route topology
- >
- > This to place the individual routes in the topology. One
- > signal can have multiple routes starting from routeEntry,
- > passing routeVia (or switchAndPosition) and ending at
- > routeExit. One specific route can only start from one
- > signal, and is placed under that signal in the railML
- > structure.
- >
- > @name [datatype: string] for example "A-1-L"
- > @routeEntry [datatype: ref to the <signal> starting the
- > route]
- > @routeExit, [all datatype: ref to any element ending the
- > route usually a signal]
- > @routeVia ( [datatype: ref to any element that the route
- > passes and uniquely describes the route from other routes
- > starting from and ending at the same signal.]
- > alternatively use @switchAndPosition. SwitchandPosition is
- > used in the future interlocking schema to define route via
- > topology. As this is somewhat complex and requires more data
- > (all switch id's and their course along the route) we
- > suggest using a simpler approach to just define any via
- > element to distinguish the routes from each other.
- > @setTime [datatype: time in seconds]
- > Time for the route to be set by the CTC and interlocking.

- > This is from the command is given by the dispatcher at the
- > CTC/OCS terminal and to the signal light lights up or the
- > movement authority is displayed in the MMI in the CAB.
- >
- > Speed profile(s) for the route
- >
- > @proceedSpeed [datatype: integer in km/h]
- > Proceed speed is a speed restrictions by the route. This is
- > valid for the whole route (from signal to signal). No
- > value=track speed
- > @releaseSpeed [datatype: integer in km/h]
- > Release speed is the speed at which the brake curve
- > intervention is removed and the train driver is unsupervised
- > except from SPAD. This is valid for the whole route (from
- > signal to signal).
- > @approachSpeed [datatype: integer in km/h] used together
- > with @approachPoint
- > @approachPoint [ref to any object from where the speed must
- > be lower than the approachSpeed this is usually a signal]
- > Used for a speed restriction on an approach zone in front of
- > the route (Before RouteEntry) a train must obey if the route
- > is closed (red light). The approachPoint refers to where the
- > approach zone starts in front of the route. This is in
- > Norway the distant signal in front of the route. The message
- > is relayed to the train by a balise of type "fremskutt
- > forsignal (FF)". The connection does not need to be
- > modeled.
- > ApproachSpeed can also be used for multiple route approach
- > speed profiling. This is outside our use case as it is not
- > implemented in Norway.
- >
- > Overlap in connection with the route
- >
- > overlap conditions by the route. The overlap condition needs
- > to be placed on the route and not on the ending signal as
- > the overlap condition can vary per what route is set.
- > @overlapRef. The overlap always starts at the RouteExit
- > signal. The reference is to the end of the overlap/slip.
- > This is usually a train detection element.
- > @overlapValidityTime [datatype: time in seconds]. Duration
- > the overlap is active blocking potential overlapping routes
- > from forming. The overlap is formed together with the route
- > and is released after overlapValidityTime has run out after
- > the overlapReleaseTimer value has been triggered.
- > @speedInOverlap [in km/h; if the attribute is not set the
- > default value is 0 km/h]. Not in our use case as speed in
- > overlap is always 0 in Norway. This is a wish by Bob
- > Jansen.

- >
- > The overlap release condition (overlapReleaseTimer) can be
- > generic determined by the @system defined in the
- > <controller>. To distinguish between a slip and an overlap,
- > is achieved with overlapValidityTime. If the value is set
- > it's an overlap. If the value is not set the overlap is a
- > slip.
- > The type of system will be mapped against attributes
- > @overlapReleaseTimer and @overlapReleaseTimerHead. These
- > will then not be needed in our use case. But I will include
- > them here for completeness:
- >
- > @overlapReleaseTimer [datatype:ref]
- > Reference to the trigger point for the overlap release
- > timer. This is usually a train detection element.
- > If no overlapReleaseTimer is set, but a overlapValidityTime
- > is set, the default value is that the timing starts from
- > when the train has stopped on the route.
- > @overlapReleaseTimerHead [boolean]
- > "yes"= valid for first axel (head) of the train
- > "no"=valid for last axel (tail/rear) of the train
- >
- > Use cases - The overlapValidityTime is triggered in
- > different ways:
- > "occupyRoute"
- > @overlapReleaseTimer=ref to routeEntry signal with
- > @overlapReleaseTimerHead=yes
- > For when the first axle of the train occupies the first TVD
- > section of the route. For when the head of the train is at
- > the routeEntry signal. Applicable for the following systems
- > in Norway: SIMIS.
- > "releasePreviousRoute"
- > @overlapReleaseTimer=ref to routeEntry signal with
- > @overlapReleaseTimerHead=no
- > For when the first axle of the train occupies the first TVD
- > section of the route and the last axle releases the TVD
- > section in front of the route. For when the rear of the
- > train is at the routeEntry signal. Applicable for the
- > following systems in Norway: NSI-63.
- > "stopOnRoute"
- > @overlapReleaseTimer and @overlapReleaseTimerHead not set.
- > For when the train has stopped on the route under ETCS L2 or
- > on a station with a local dispatcher (that can verify that
- > the train has stopped).
- > "slip"
- > @overlapReleaseTimer=ref to train detector element behind
- > routeExit signal with @overlapReleaseTimerHead=no
- > for when the last axle releases the TVD section of the

> slip/overlap behind the route (DE:"Durchrutschweg").

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