Subject: Multi modality in railML3.4
Posted by Torben Brand on Fri, 12 Dec 2025 12:42:31 GMT
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ISO Raildax and IDX4Rail both have a requirement for multimodality in railML. Both being limited to "guided transportation". So railway, tram, metro, hyperloop, funicular etc.

From the ISO new work item proposal: "A track-bound (also known as a guided-way) transportation system consists of the systems: railway, metro (steel or rubber wheels), tram, cable cars, funiculars, maglev, hyperloop, guided busway or other track bound (guided) vehicle. In the standard the railway system will be the primary focus, but all other mentioned systems can be applied"

What about modelling it under: Infrastructure/topology/network?

@mode: mode of (guided) transportation.
- Railway: heavy rail usually with a higher axle load and/or speed, distance and freight than the other forms of guided transportation, usually on segregated right-of-way.
- Light rail: passenger urban rail transit that uses rolling stock derived from tram technology while infrastructure features from heavy rail on segregated right-of-way.
- Tram: A tram (also known as a streetcar or trolley in Canada and the United States, or a Tramcar) is an urban rail transit type in which vehicles, whether individual railcars or multiple-unit trains, run on tramway tracks on urban public streets; some include segments on segregated right-of-way.
- Metro: Also know as rapid transit, mass rapid transit (MRT) or rail rapid transit (RRT), is a type of high-capacity public transport that is generally built in urban areas.
- Monorail: A monorail is an urban rail transit type in which trains run on or are suspended above a single rail or beam structure to transport people. They have an intermediate transport capacity at the regional and metropolitan level, generally greater than that of the tram and less than that of the rapid transit.
- Funicular: a railway that uses a cable, rope or chain to haul trains. The most common use for a cable railway is to move vehicles on a steeply graded line that is too steep for conventional locomotives.
- Other:

Alternative the mode could also be defined microscoipically on the track or macroscopically on the operationalPoint.

[1] https://wiki3.railml.org/wiki/IS:network

Subject: Re: Multi modality in railML3.4
Posted by Milan Wölke on Tue, 20 Jan 2026 15:36:34 GMT
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Hi Torben,

thanks for your suggestion. In general I think encoding the type of "guided transport" is a good idea. Especially when considering the requirements introduced by IDX4rail (german research project railML.org is participating in - see https://www.idx4rail.de/de/) that very much makes sense to me.

However, I am not convinced that the <network> is the correct place for that. From my point of view the topology is something abstract and not connected to the operation run on it. All operational aspects are associated on the topology from other areas of the railML document.

Another aspect I would like to draw attention to is, if it is required to have multiple such modes for the same part of infrastructure, e.g. a track that is used by light rail and heavy rail. Is this required? This actually raises the question what exactly is expressed by the mode. Is it for information only or is it intended to imply other aspects like what kind of operational rules apply for the infrastructure marked like that. In case of the latter we should be aware that there is related information like this already at the <line> as <lineOperation>.

Regarding where to add such information, I think the <track> makes more sense. Depending on the answer to the question if multiple modes are required it could also be modelled as a repeatable element, something like <allowsTransportMode value="XXXX">. I think that should solve the issue on a microscopic level.

Regarding macroscopic view, why would you associate this with the <operationalPoint>? My first idea would probably be more towards the <line>, like with the existing <lineOperation>. Can you please explain your reasoning, maybe I am missing something here.

Best regards, Milan

Subject: Re: Multi modality in railML3.4
Posted by Torben Brand on Mon, 28 Sep 2026 21:16:50 GMT
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Thank you Milan for good input.
Primary UC was not multimodality on same track but this is a good point!

I first thought the networks would be separated (but should be explicit given). I agree that the <topology> should be modality independent so the track is a good place. But I think that the <line> is a good compromise between track and network. As I would think the line section would be the smallest multimodal segment? Have others experiences with this. Do we need to go down to the track level?

I agree the mode should be a repeatable sub-element as you can have multiple modes.
For (rare) multimodality on the same line section/track yes use line/lineOperation to define the operational rules.

The reference in OperationalPoint was intended for implicit modelling. Eg, we model a railway network but also want to define the OP has metro and tram services. We could re-introduce the propService element from railml 2.5 [1]? But please clean it up a bit...

[1] https://wiki2.railml.org/wiki/IS:propService

Subject: Re: Multi modality in railML3.4
Posted by christian.rahmig on Fri, 02 Oct 2026 09:20:44 GMT
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Dear Torben,

please find a first approach to the solution of this model enhancement in Gitlab workitem #817 [1].

@all: Let's review this in our next NEST/SCTP working group meeting. Apparently, any kind of feedback is highly appreciated.

[1] https://development.railml.org/railml/version3/-/work_items/ 817

Best regards
Christian

Subject: Re: Multi modality in railML3.4
Posted by Torben Brand on Wed, 07 Oct 2026 14:34:45 GMT
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After discussion in SCTP WG 2.10.2026 we concluded on the following:

Explicit definition of the mode of transport in the modelling seems to be correct placed on the <line> (section) element level.

The enumeration list for @mode should be (with definitions in original post):
- Railway
- Tram
- Metro
- Other: (being light rail, monorail, hyperloop, funicular and others) If some of the other modes have extensive use they can be explicitly named in the enumeration in future versions of railML.

For muli-mode operation use the existing attribute lineOperation@modeOfOperation.

We introduce a new repeatable element <services> under <operationalPoint> to implicitly define other mode of transport that are available at the operational point, but which are not modelled explicitly.

These are:
- Railway
- Tram

- Metro
- Bus
- Ship
- Airport
- Other:

Subject: Re: Multi modality in railML3.4
Posted by christian.rahmig on Tue, 20 Oct 2026 19:27:37 GMT
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Dear Torben,

the proposed solution in Gitlab workitem #817 [1] was updated according to your remarks. Please have a reviewing look and let me know in case further adaptations are required.

[1] https://development.railml.org/railml/version3/-/work_items/ 817

Best regards
Christian