

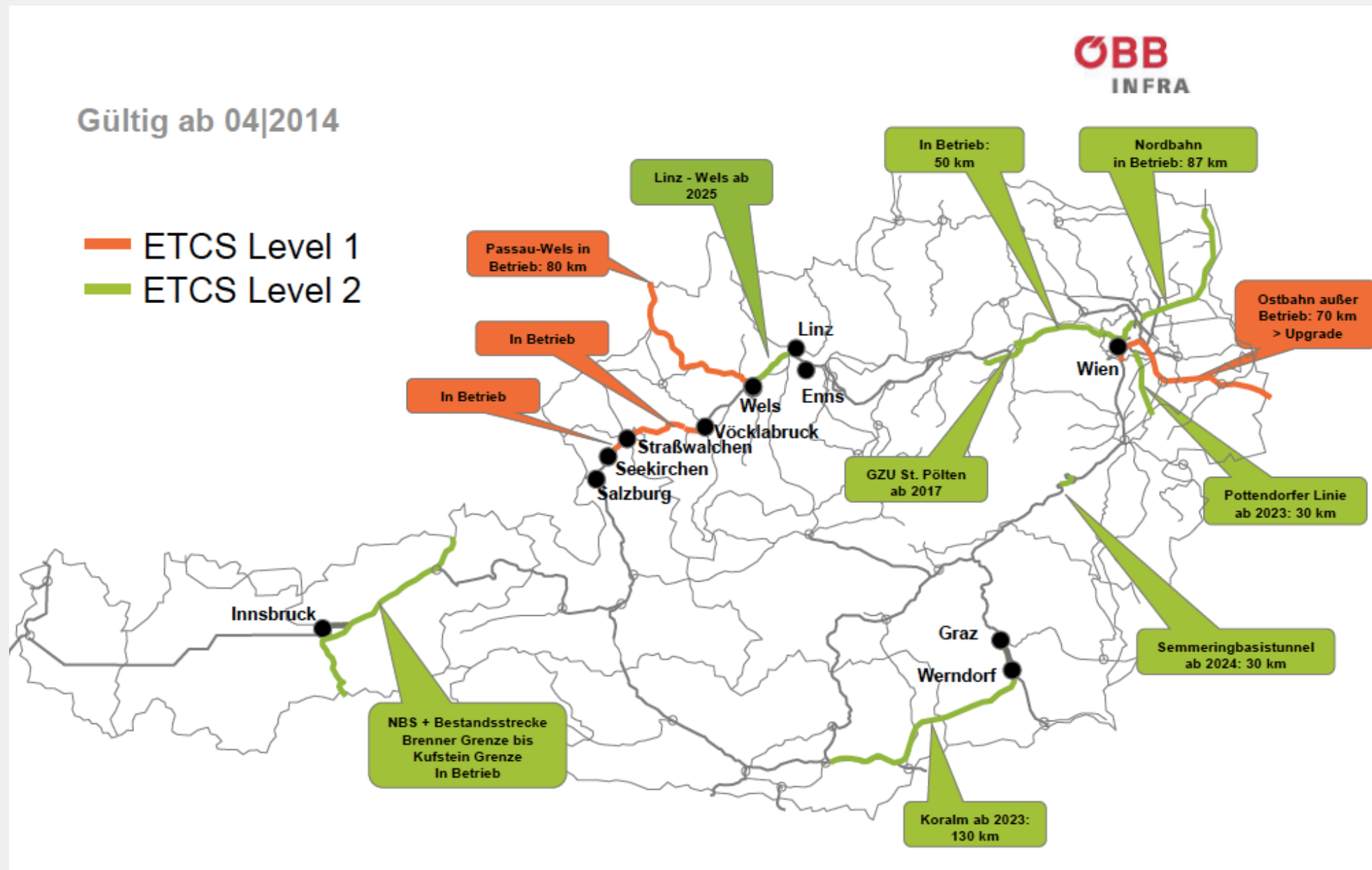
Application of OpenTrack's Headway Calculator for ETCS Projects in Austria

**Presentation at nextRail 19
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OpenTrack Railway Technology Ltd.**

ETCS Projects in Austria



Headway Calculator

Headway Calculator

First Train

Course ID: S 18000

Create Train Diagram

Performance [%]: 100 Res./Rel.: Discrete

Train: Commuter 1 Part

Second Train

Course ID: S 18002

Create Train Diagram

Performance [%]: 100 Res./Rel.: Discrete

Train: Commuter 1 Part

Start Time Offset [s]:

Misc.

Mode: Search Headway

Headway from [s]: 90 to [s]: 3600

Conflicts to avoid

☒ Stop at Signal

☒ Braking for Route

☐ Braking for Signal

☐ Braking for Approach Aspect

☒ Extended Dwell Time

☐ Change of Itinerary

Result

Status: Finished

Result: Headway [s]: 207.0

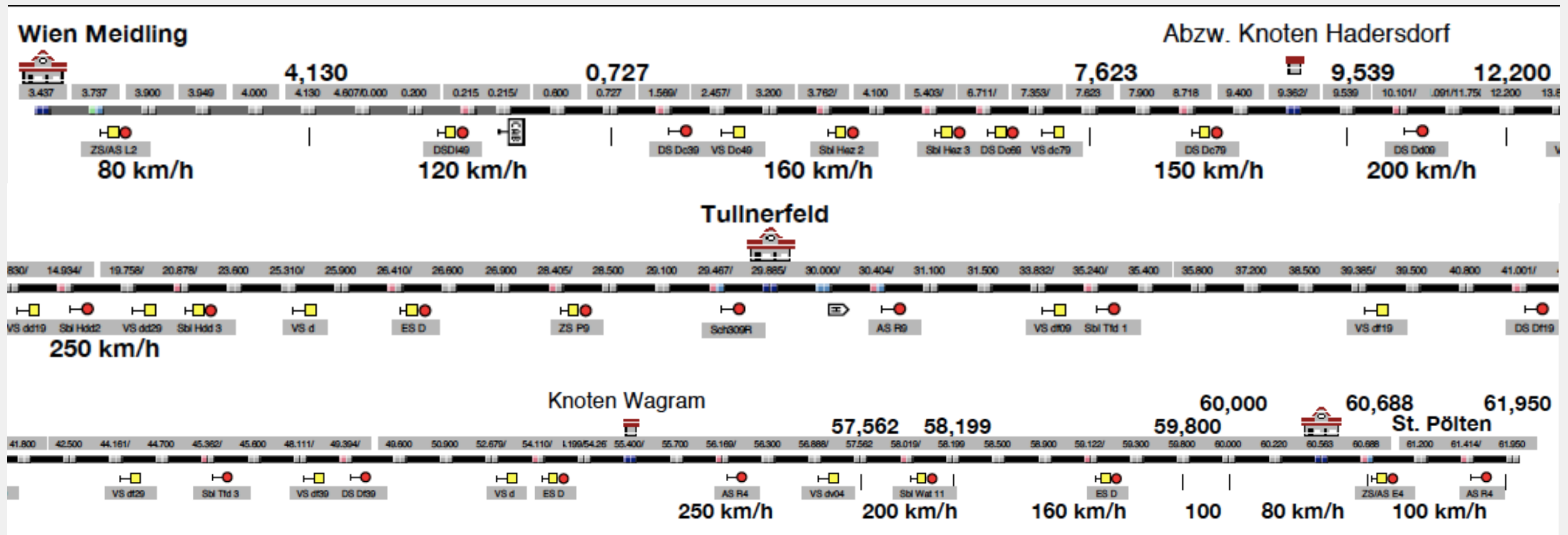
Comment:

Swap Trains

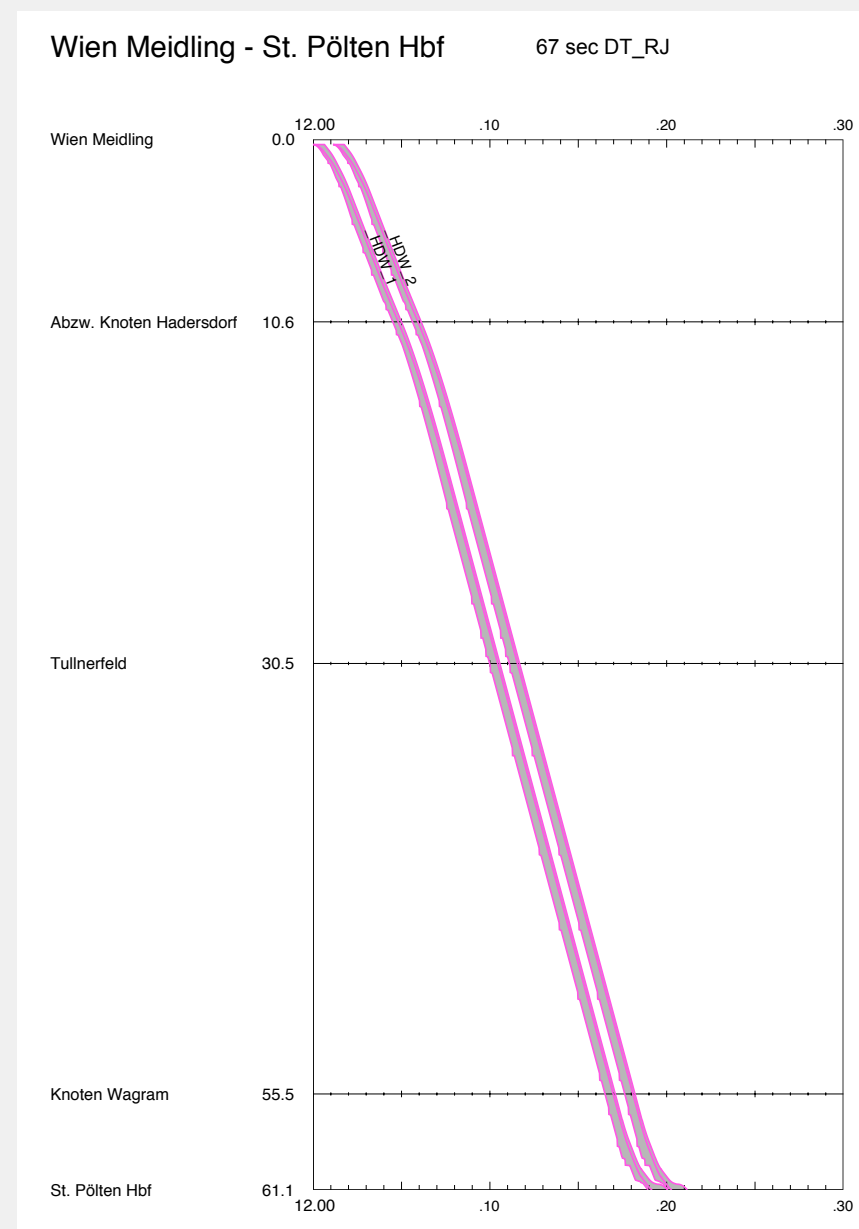
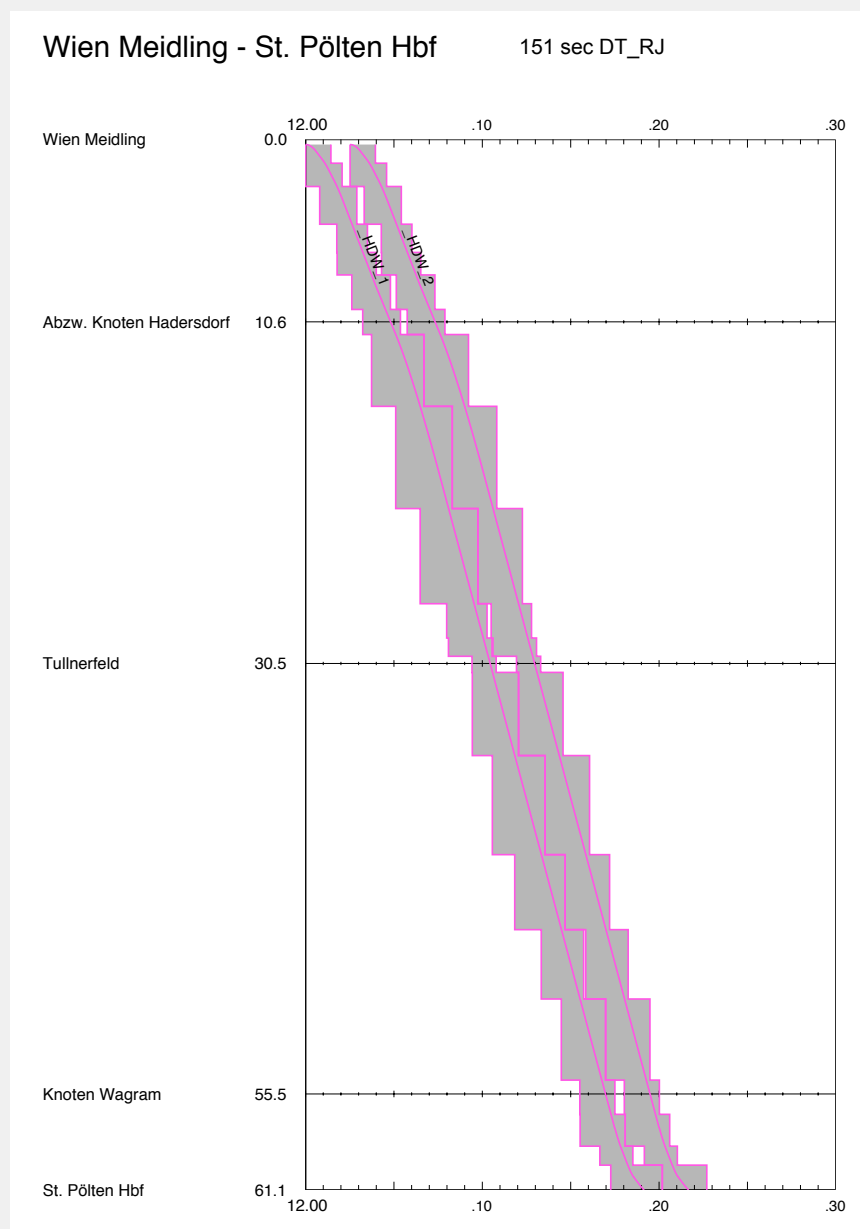
Stop

Start

Show Case HSL Wien - St. Pölten

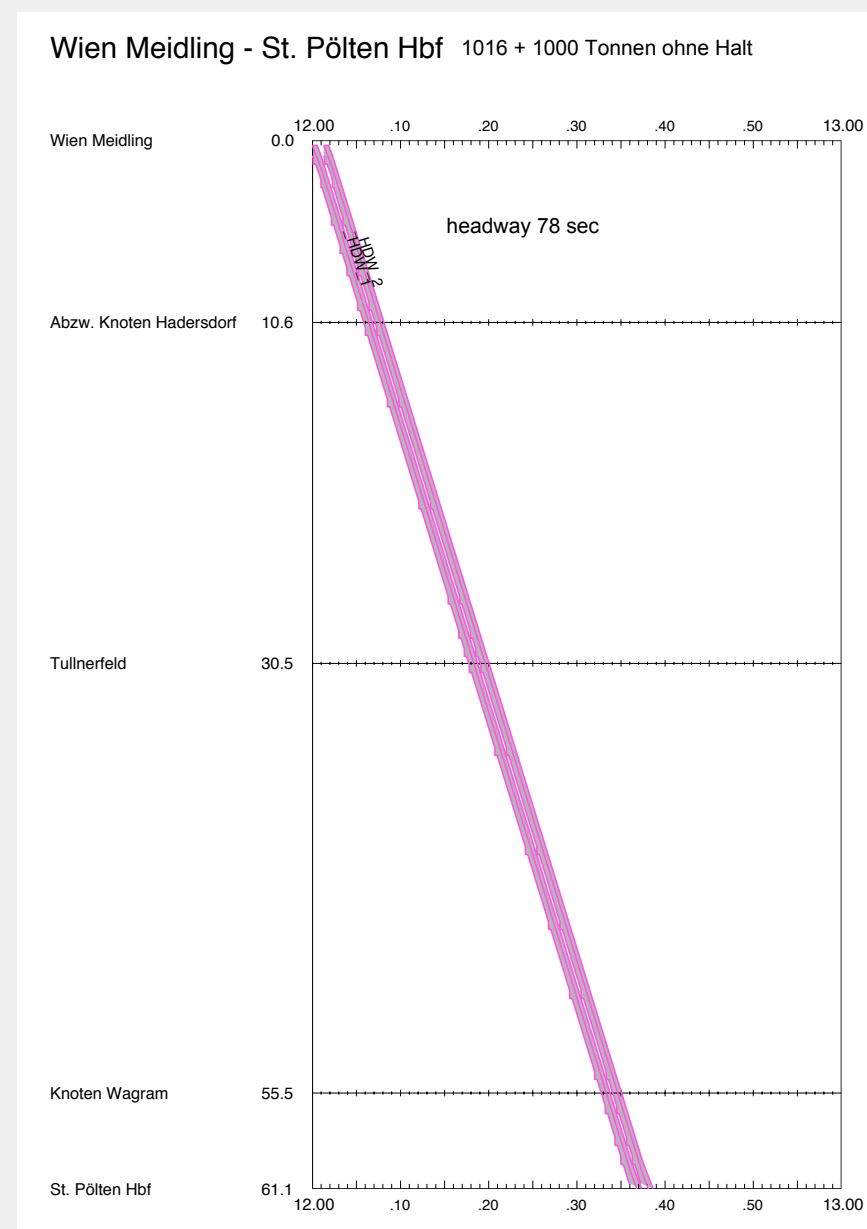
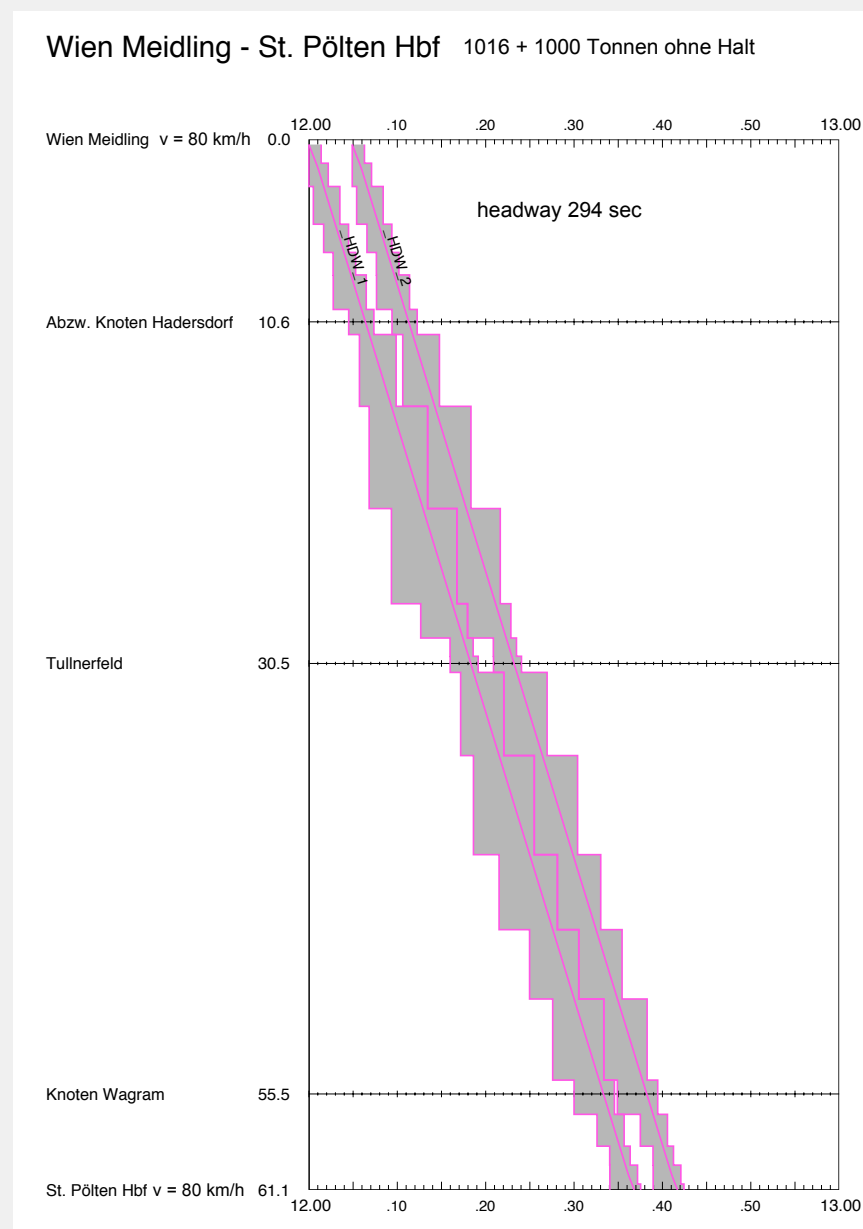


Show Case HSL Wien - St. Pölten



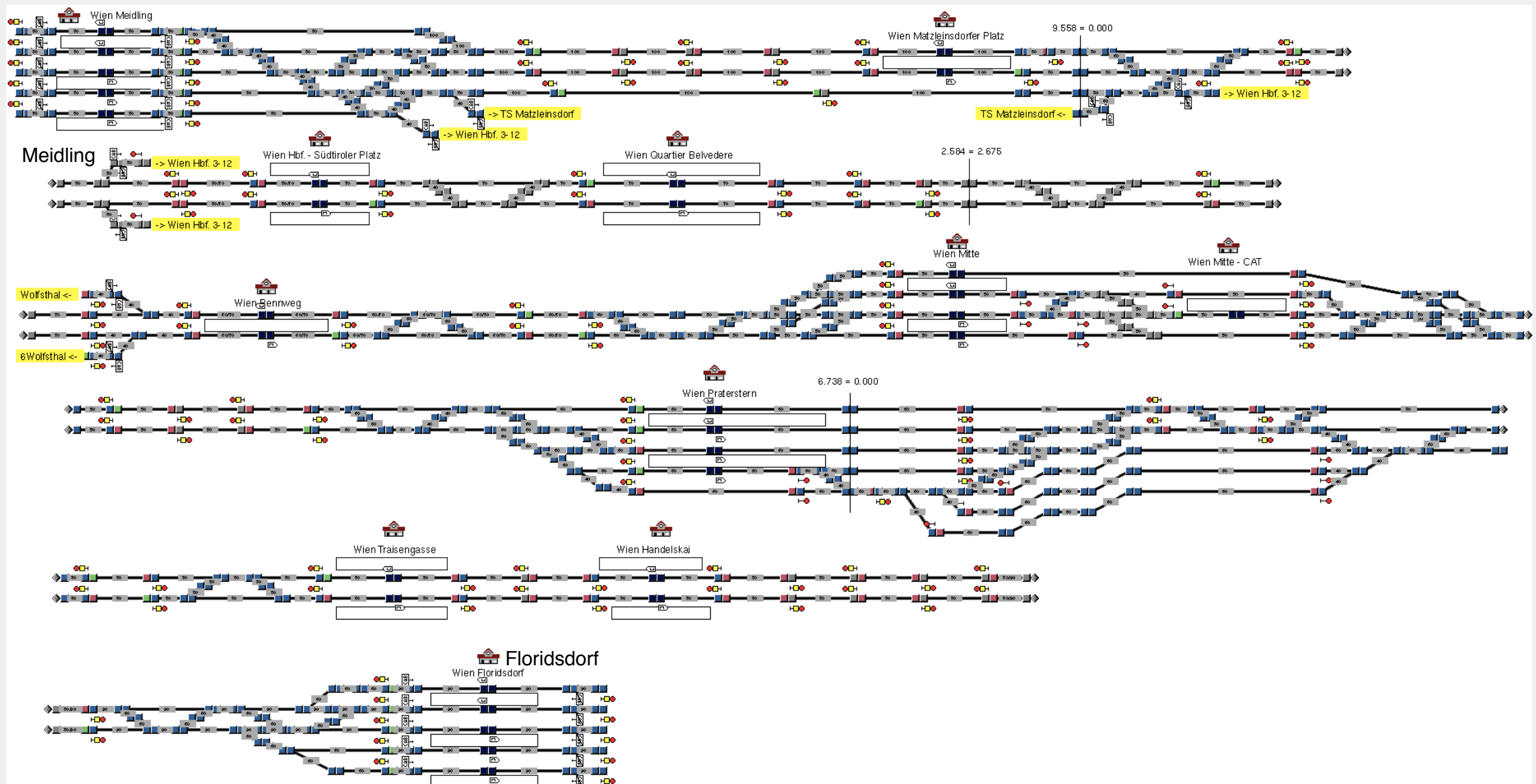
- Shortening of headway between two Railjets from 151 to 67 seconds when using Level 3 instead of Level 2

Show Case HSL Wien - St. Pölten

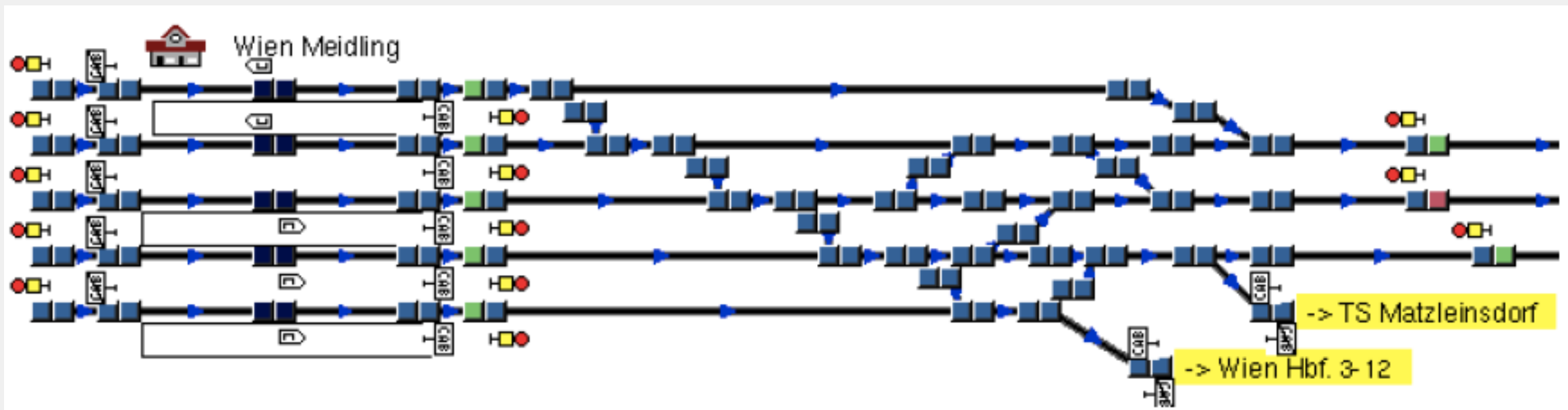


- Shortening of headway between two cargo trains from 294 to 78 seconds when using Level 3 instead of Level 2

Show Case Wiener S-Bahn-Stammstrecke



Example for ETCS Level 2 in OpenTrack



- CAB Start & End Signals in Topology Documents
- Loop / Radio (ETCS) activated in Inspector - Edge
- ETCS Braking Curve Settings in Trains

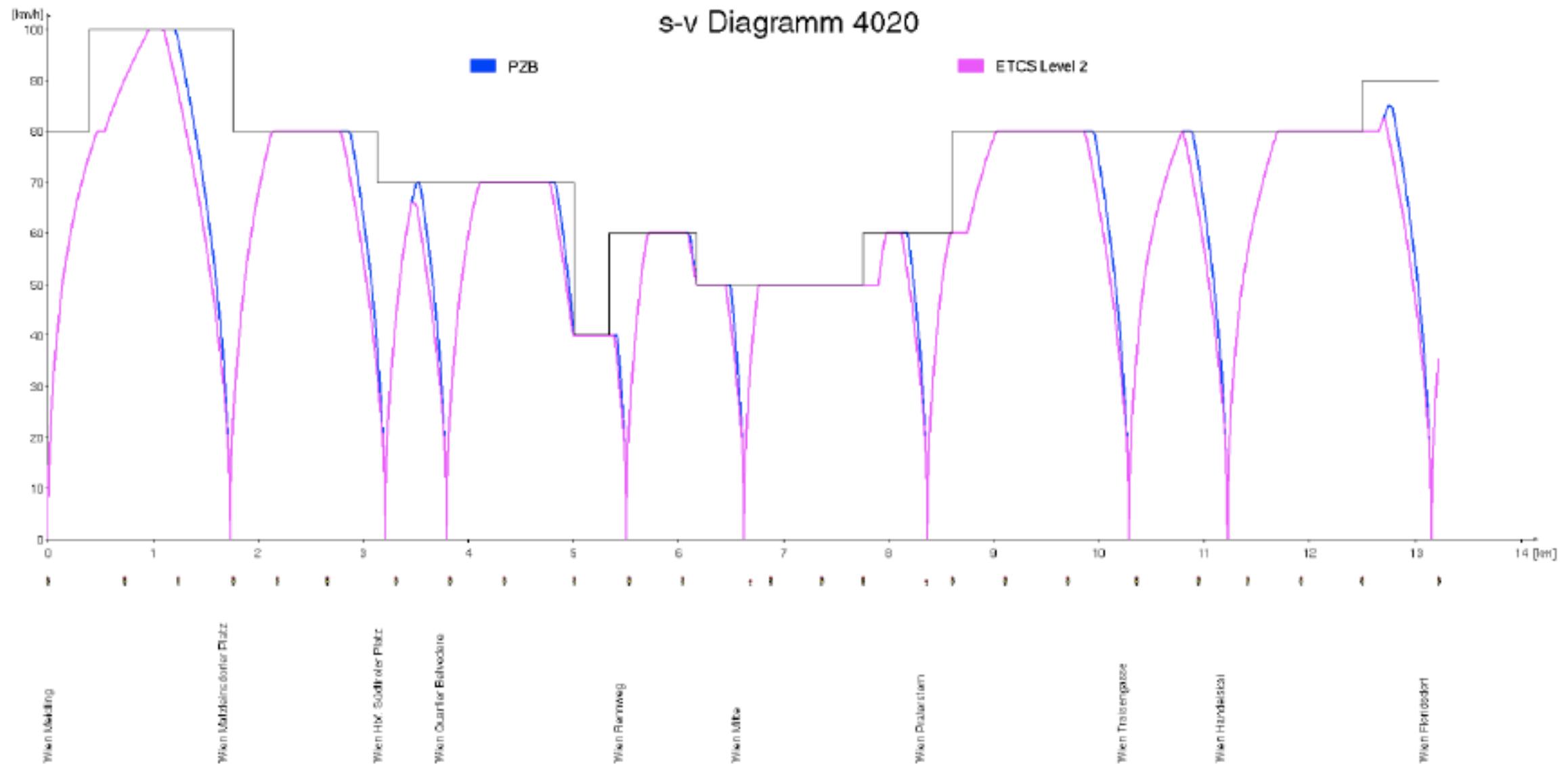
Change of Headway when using Level 2 on existing Block Layout instead of PZB

1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	7	6	7	12	11
4020	8	7	9	12	11
4024	8	8	8	12	13
4746	6	5	5	8	9
Westbahn*	2	2	2	4	6

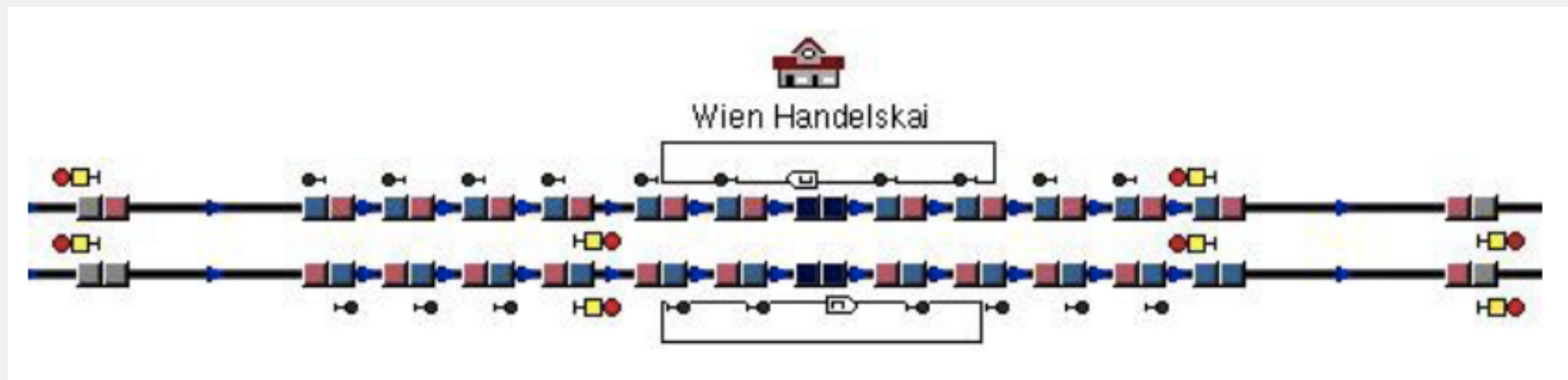
1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	8	7	7	8	6
4020	8	7	7	10	6
4024	8	7	7	11	8
4746	7	8	8	7	6
Westbahn*	8	7	7	7	7

* Westbahn has a different stopping pattern!

Speed Distance Diagram for PZB and ETCS Level 2



Solution: Short Blocks in Stations



- Do not forget to replace routes in paths!

Change of Headway when using Level 2 with Short Blocks in Stations instead of PZB

1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	-20	-8	-11	-19	-27
4020	-9	-17	-20	-11	-27
4024	-11	-11	-16	-14	-24
4746	-5	-5	-6	-21	-17
Westbahn*	-9	-16	-17	-23	-30

1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	-34	-22	-22	-12	-30
4020	-16	-34	-34	-1	-26
4024	-1	-21	-37	5	-21
4746	-21	-17	-17	-36	-42
Westbahn*	-37	-40	-42	-34	-29

* Westbahn has a different stopping pattern!

Change of Headway when using Level 3 instead of PZB

1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	-34	-22	-25	-19	-41
4020	-23	-35	-34	-17	-43
4024	-24	-29	-33	-19	-41
4746	-22	-22	-23	-37	-36
Westbahn*	-31	-36	-36	-46	-47

1st train \ 2nd train	Doppelstock-Wendezug [s]	4020 [s]	4024 [s]	4746 [s]	Westbahn* [s]
Doppelstock-Wendezug	-48	-35	-35	-29	-38
4020	-38	-47	-47	-28	-34
4024	-27	-37	-49	-23	-34
4746	-35	-30	-30	-48	-52
Westbahn*	-49	-52	-51	-47	-54

* Westbahn has a different stopping pattern!

Questions ?