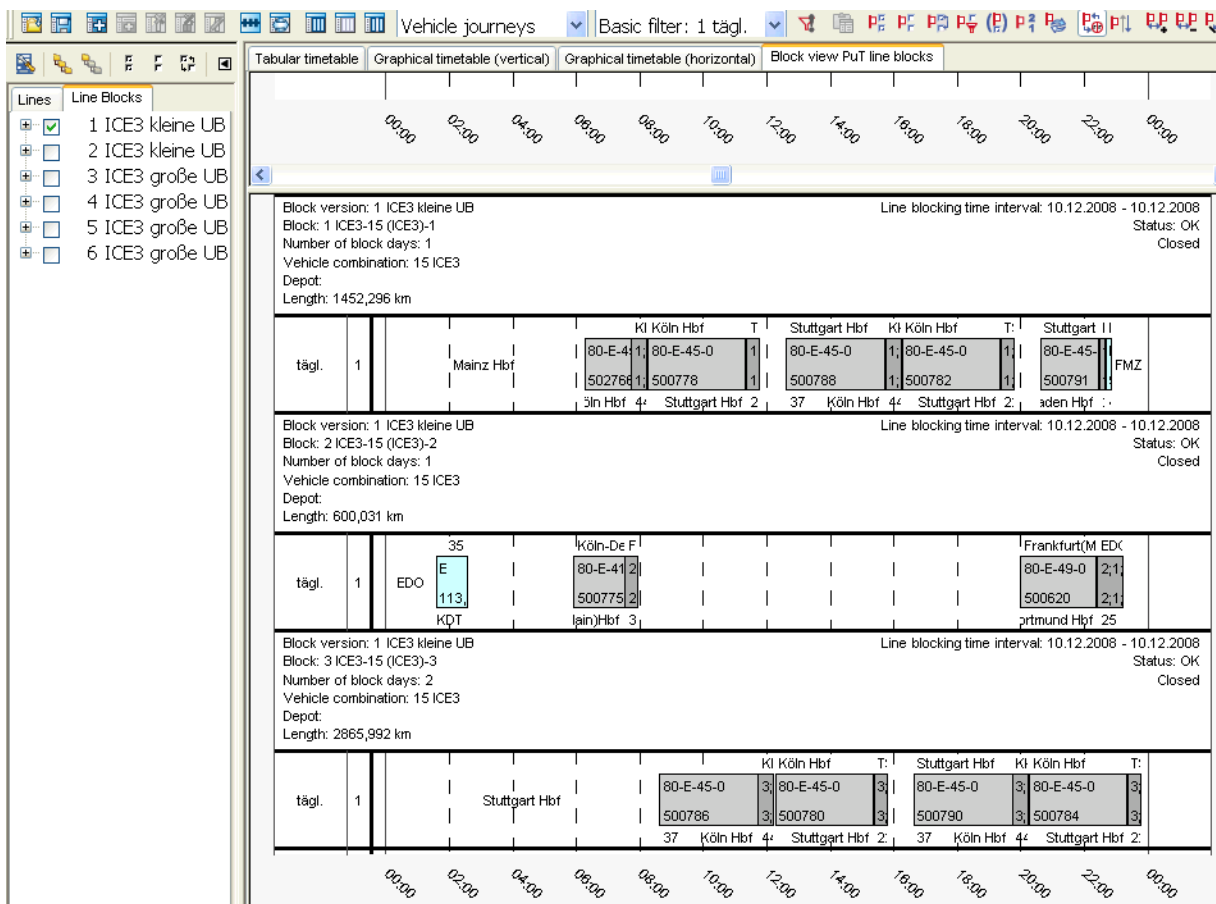


Line Blocking

In VISUM 11 we revamped completely the line blocking functionality in VISUM. With VISUM 11.5 we extend the new functionality in two directions.

First, VISUM now offers a line block viewer that visualizes the result of the calculation in a graphical form that can even be edited on screen. We incorporated the line blocking view into the graphical timetable editor (add-on module).



In addition to the three modes of the timetable editor there is now a fourth tab named *Block view PuT line blocks*. It displays all blocks belonging to a block version as Gantt charts with a common horizontal time axis. For each block, a header summarizes information about the vehicle combination used, the length in days and in km, the depot to which the block belongs, and the planning status. Then the Gantt chart(s) follow, one for each day of the block, labelled with running day restrictions (valid days) if any apply. The labelling (e.g. first and last stop) and other visual aspects (e.g. colours, line styles) of the boxes representing the block items can be fully customized. On right click all visible elements display context menus with operations for adding, removing, editing, or just inspecting individual block items.

Secondly, the basic line blocking optimizer is complemented by an extended optimizer which can take into account further constraints and objectives. The most requested extension allows vehicle combinations to be substituted if this improves the objective function (e.g. requires fewer vehicles). In basic mode you specify the vehicle combination for each vehicle journey – before optimizing the line blocking. Imagine the situation where a small number of vehicle journeys absolutely must be served by low-floor buses, all others can be served by either low-floor or standard buses. For the exclusive low-floor services you specify low-floor buses as the vehicle combination. But what do you specify for the other services? If you specify standard buses, then none of these services will be operated by low-floor buses, potentially leading to poor utilization of the low-floor fleet. Ideally, low-floor buses should work “just enough” of the other services, so that their blocks are full, the rest operate with standard buses.

Tabular timetable	Graphical timetable (vertical)	Graphical timetable (horizontal)	Block view P		
Number	500789	500536			
Name	829	521			
Line	80-E-40-0	80-E-40-0			
Direction	H	H			
Line route	KK_KFKB_FF	EDO_EE_FF			
Time profile	KKDZ	ICE3			
Operator	30 DB Fernverkehr	30 DB Fernverkehr			
Service Trip Pattern Number	0	0			
Veh. journey sections	1	1			
Start stop point	207 KK	80 EDO			
End stop point	105 FF	105 FF			
Departure	04:36:00	05:52:00			
Arrival	06:10:00	08:32:00			
Coupled	0	0			
Vehicle Combination Set	15,16,17,18	15,16,17,18			
Vehicle combination	15 ICE3	15 ICE3			
ValidDay	1 tägl.	1 tägl.			
Pre Preparation Time	0s	0s			
Post Preparation Time	25min	25min			
Filter	No	Code	Name	Departure (completed)	Departure (completed)
<input type="checkbox"/>	207	KK	Köln Hbf		
<input type="checkbox"/>	3368	KKDZ	Köln-Deutz		
<input type="checkbox"/>	100000	KFKB	Flughafen Köln-		
<input type="checkbox"/>	5556	KSIB	Siegburg		
<input type="checkbox"/>	667	FMT	Montabaur		
<input type="checkbox"/>	100000	FLIS	Limburg Süd		
<input type="checkbox"/>	807000	FFLF	F-Flughafen Fer		
<input type="checkbox"/>	105	FF	Frankfurt(Main)l	06:10:00	08:32:00
<input type="checkbox"/>	807000	FFLF	F-Flughafen Fer	05:57:00	08:19:00
<input type="checkbox"/>	100000	FLIS	Limburg Süd	05:34:00	07:55:00

In extended mode you can do exactly that: because a low-floor bus can substitute for a standard bus (but not v.v.), you specify the set of *both* low-floor *and* standard buses for the other services. Line blocking will then assign the vehicle combinations that lead to optimal fleet size, and will prefer the less expensive one where both vehicle combinations fit equally well. Other possible constraints include matching vehicle size to demand. Other possible objectives include minimizing interlining and preferring regularly-formed line blocks.