

**PTV** BALANCE

the mind of movement



A blurred background image of a city street at night. In the foreground, the side of a yellow and white police car is visible, featuring a red emergency light bar. The background is filled with out-of-focus lights from traffic signals and other vehicles, creating a bokeh effect of reds, blues, and yellows.

# WHO KEEPS THE CITY'S RHYTHM FLOWING?

# IMPLEMENT YOUR TRAFFIC-ADAPTIVE NETWORK CONTROL



Short delays, moderate travel times, fewer emissions, reduced noise. There are plenty of reasons to optimise traffic lights in inner cities; yet there is only one way to handle node capacity in a way that is sensitive to demand: by implementing a traffic-adaptive control system.

PTV Balance is the ideal software tool for traffic-adaptive network control. Unlike a fixed time control system which always runs its program in the same way regardless of the actual traffic situation, traffic-adaptive control reacts to what's happening on the roads and can efficiently utilise the capacity of the nodes. As a model-based control system, PTV Balance goes one step further by automatically designing a range of control options that can be evaluated using a model, before being applied in the field. That means the best control option always gets a green light - even over multiple nodes.

The internal traffic model is evaluated via a custom performance index. This performance index represents the weighted sum of all stops, waiting periods and blocking backs. The traffic engineer can adjust the weighting for each signal group.

# 4 REASONS WHY YOU SHOULD RELY ON PTV BALANCE



## BENEFITS



### USER-FRIENDLY & EFFICIENT

Create dynamic green waves without a lot of detailed planning and reduce waiting times, travel times, emissions and noise in your network.



### ECONOMICALLY VALUABLE

Use traffic-adaptive network control for your entire network and you'll get the green light for every road, without having to invest in expensive detectors additionally. Thanks to its model-based approach, PTV Balance can deliver the optimal framework signal plan even for road networks without extensive detection systems.



### PERFECTLY INTEGRATED

Build on your existing PTV Visum demand model by connecting it to PTV Balance or use your PTV Optima to feed PTV Balance with real-time traffic data. Framework signal plans created in PTV Balance can easily be brought over into the PTV Vissim simulation environment for testing and calibration. What's more, PTV Balance is fully compatible with PTV Epics, which is a control instrument specially designed for single nodes that adapts signal control to individual vehicles.



### RELIABLE CUSTOMER SERVICE

Become part of a large international community of users and benefit from an expert support team, professional customer service, comprehensive documentation, an extensive training programme, and user seminars and workshops which offer you intensive exchange of knowledge and constant dialogue.

# USING PTV BALANCE

## IN PRACTICE

PTV Balance allows you to orchestrate traffic lights across multiple nodes and activate green waves. The model-based network control optimises the signal programs every five minutes in response to current traffic flows.

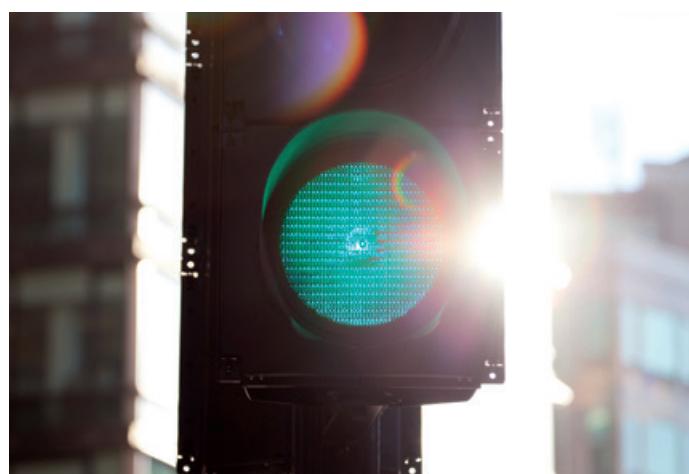
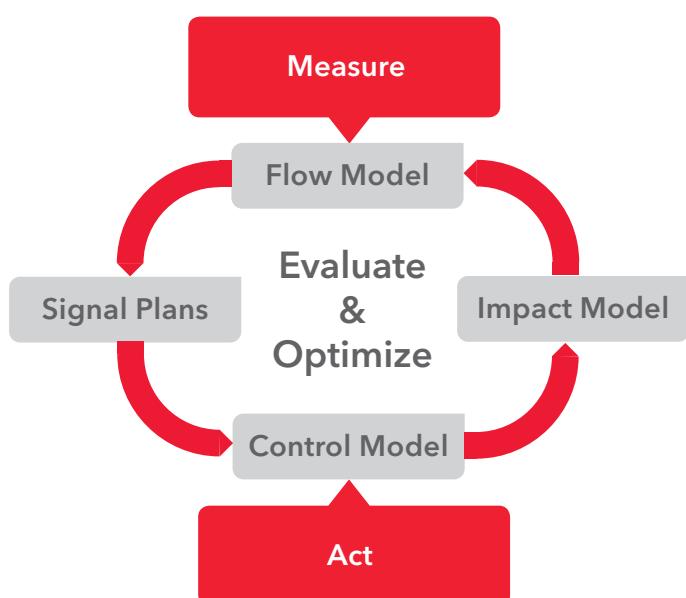
At the heart of PTV Balance is a two-layer real-time transport model. In the initial macroscopic stage, PTV Balance uses detector data to derive the traffic density on individual routes and side roads. This stage can also be handled by PTV Optima, the model-based solution for traffic prediction, which increases sensitivity to known roadworks and accidents.

Based on the results of the macroscopic model, PTV Balance calculates a number of different strategic framework signal plans. An integrated mesoscopic model evaluates the different signal control options over multiple nodes in just a few seconds, taking into account their effects on stops, waiting times and blocking backs. The evaluation is based on a custom performance index, which represents the weighted sum of all stops, waiting periods and blocking backs. The weighting can be adjusted for each signal group by the traffic engineer. Furthermore, a range of calculation results are recorded and displayed in a custom graphical user interface (GUI), making it easier to calibrate PTV Balance as part of a simulation, or to improve monitoring during operation.

PTV Balance then transmits the optimal framework signal plan to the local control devices, where they are either applied directly or refined locally using a tactical optimisation tool, such as PTV Epics. PTV Balance repeats the full optimisation process every five minutes.

A demand model created in PTV Visum serves to provide PTV Balance with network and demand data. At the same time, this can also be used as an input for PTV Vissim, as well as for testing and calibration. The parameters of the traffic lights can be edited and applied across all programmes by PTV Visum, PTV Vissim, PTV Balance or PTV Epics.

### ADAPTIVE MODEL-BASED CONTROL

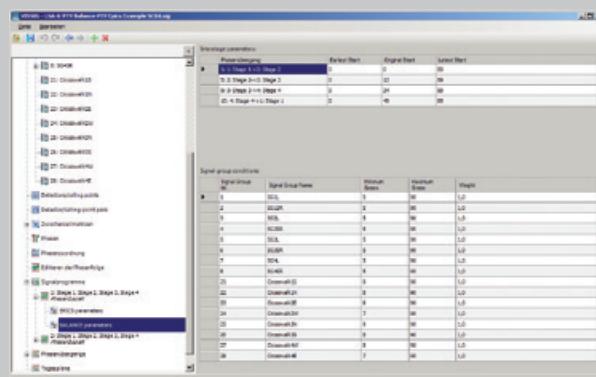


# WORKING WITH PTV BALANCE

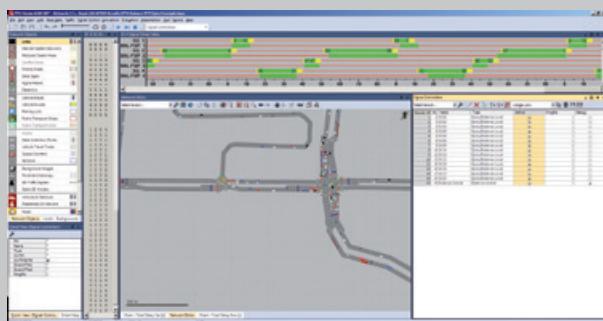
PTV Balance has a custom graphical user interface (GUI) that makes it easy to calibrate PTV Balance as part of a simulation, or to improve monitoring during operation.



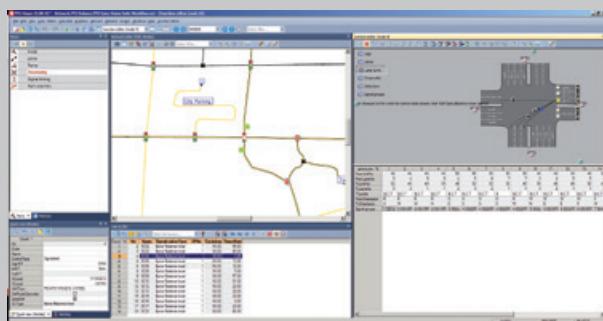
Compare the status quo with PTV Balance's recommended optimization: The web-based GUI gives information about the Performance Index and displays the level of service descriptively. Furthermore, you can configure the parameter you would like to analyze easily.



It's comfortable working with the signal control editor to set the parameter of each signal control and to decide about the interstages and the weighting for each signal group.



Thanks to its seamless integration you can test in PTV Vissim to what extent PTV Balance's optimization has been put into practice and compare the simulation with the reality. For a smooth simulation you can switch on or off several elements of the signal control due to your needs and also have a look at the single signal control instead of the whole corridor.



The junction editor of PTV Visum allows you to adjust lanes, turns and signalization of the single nodes.

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