GP_Designer

gmv
INNOVATING SOLUTIONS

ITS

The best solution for mass transit planning and operation

GMV Planner offers transit operators and authorities a really powerful tool for the complete lifecycle management of the public transport service planning and operation.

Its module ***GMV Planner_Designer*** [***GP_Designer***] is a comprehensive and complex software tool for designing the transit network and generating optimum / automatic timetables and schedules for various calendars and types of day, integrating different operators, transport types or administration units in the same system. It is aimed at both mass transit authorities and operators for obtaining efficient and passenger-friendly transport based on:

- Optimization of transit network
- Nodal and line synchronization
- Automatic / Optimum generation of trips and schedules
- Integration of all city IT systems
- Cooperation with mobile applications

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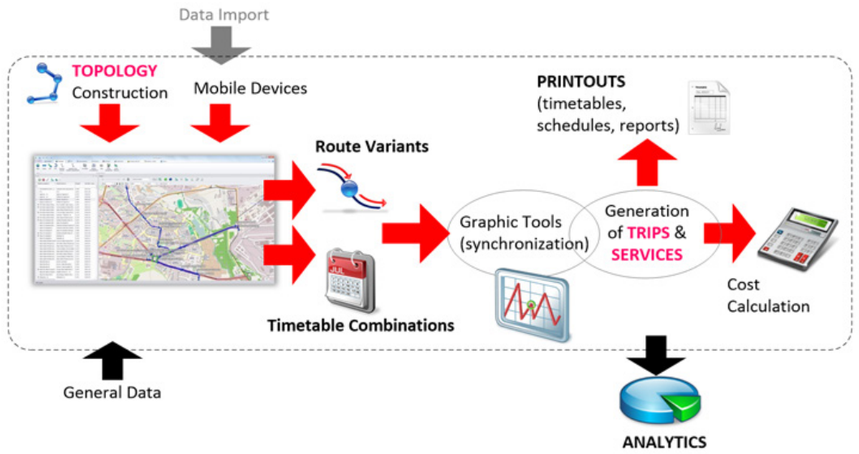
COMPLETE LIFECYCLE MANAGEMENT FOR LONG-TERM PLANNING ACTIVITIES

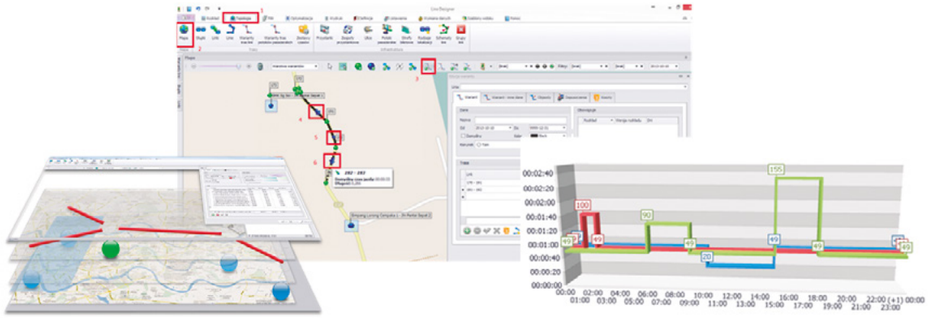
GP_Designer offers both mass transit authorities and operators all features needed in order to perform a complete lifecycle management for long-term planning activities in one single tool, from transit network construction to timetabling and scheduling.



TOPOLOGY CONSTRUCTION: QUICK AND EASY

The creation of topology elements (stops, links, routes, lines, variants...) and their attributes is quick and easy by means of both tabular and graphical edition available directly over the map. The user can select **manual routing with adjustable precision or automatic routing**. The tool offers a **layered presentation of data** for an effective management of different data types and details depending on the zoom level. Various map server providers can be chosen (google Maps, OpenStreetMaps, Ovi Maps) to support the routes and distances determination.

GP_Designer can include **a mobile application running in a Tablet** device with GPS where a d**ynamic registration of topology**, mileage and travel times can be made in real driving conditions. The mobile application can also be used to analyse the compliance of trips with timetable and for determining time zones.



PLANNING AND OPTIMIZATION OF TIMETABLES

GP_Designer provides comprehensive optimization tools to develop a timetable considering complex interrelationships and variables as **passenger flow, frequency of vehicles of different lines, transfer needs, efficient use of rolling stock**...

The user finds at his disposal plenty of interactive tabular and graphic tools such as jig-saw chart (route-time), block charts, synchronization graphic tool view...for calendar-based planning. It is also possible to automate common tasks, such as generating trips according to specified parameters. Modifications and adjustments after changes in topology and planning variants for analysis are fully supported..

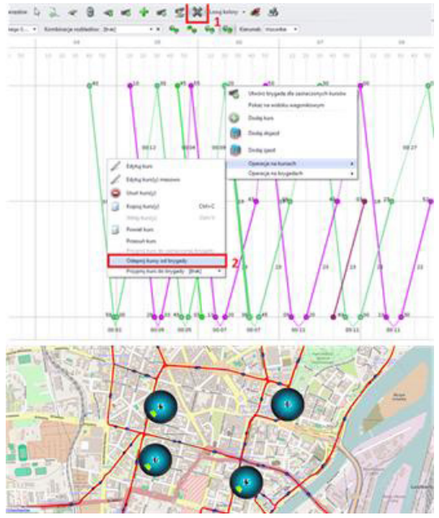
Historical data from Fleet Management systems (GMV's or from third parties) can provide riding times, ridership and time zones that are used by ***GP_Designer*** to provide more optimum and realistic timetables.

SYNCHRONIZATION IN NODES AND LINES: PASSENGER FLOW AND THEIR COMFORT IN THE SPOTLIGHT

In order to **design effective transfers** system and to assure customers' comfort, ***GP_Designer*** is equipped with numerous advanced tools for registering interchange rules and having them visualized, offering an e**xcellent control of schedule** compliance and integrated automation mechanisms which can quickly correct any discrepancies of departure times.

Thus the user can take special care of sensitive topology elements. Each change of trip data results in recalculation of whole data that affects driving times. Automated collision control features and advanced filters help to manage the required synchronization..

SCHEDULING: DEPLOYMENT OF BLOCKS AND DUTIES WITH HIGH COMPLIANCE AND COST-EFFECTIVENESS



GP_Designer includes **optimization modules** for timetables and schedules. Artificial intelligence, - based on **complex mathematical algorithms** -, models and analyses possible solutions, selecting the best ones to **maximize passenger satisfaction and minimize operator cost**.

Manual, automatic and optimized schedules-building modes are available through powerful tabular and graphical tools. Generated schedules may include revenue and non-revenue trips and special tasks (breaks, reserve...).

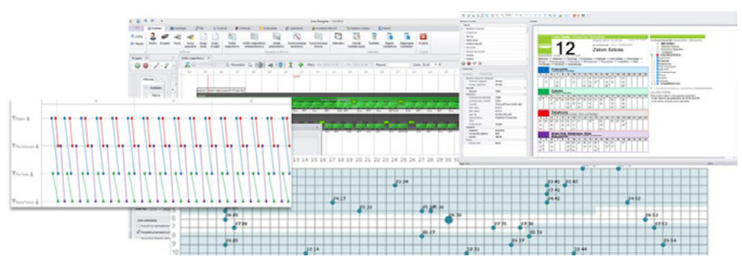
The solutions observe the required rules (relief times, work time, break times, collective agreement rules...). Scheduling is done in accordance with **legal requirements and established rules**. Verification of compliance and suggestions for possible splits are also provided. **Sensitivity analysis** through changes in timetables or rules helps the transit authority and the operator to analyze the demand for transport and issue tasks.

The user gets the chance to validate the solution by performing **traffic simulations** on the map in order to detect issues as sections with too high occupancy, warnings about not fulfilling the fleet requirements...

Cost of each trip is customized being made up of any number of components. The costs of schedules/timetables may be obtained by operator, line/ route, block/duty, combinations of schedules (workdays, Sat-Sun).

USER-FRIENDLINESS AND ERGONOMICS ENHANCING THE USER EXPERIENCE

The operations are supported by mobile and latest internet technologies. The ergonomic and **user-friendly graphical** interface is based on intuitive standards of Microsoft™ offering to the user configurable screens, stackable windows, the option to work on multiple monitors, customized representation of the information and pre-defined setting templates, multiple forms of presentation and graphical editing (tabular, jig-saw chart -route/time-, GIS, block chart, node and linear synchronization view...), advanced search filter, quick access to all program tools...Features such as the layered presentation of data, several map providers, GPS data supporting route and line edition and massive data edition strongly increase the user performance. The results provided are ready to be printed for all staff or for individual agents.

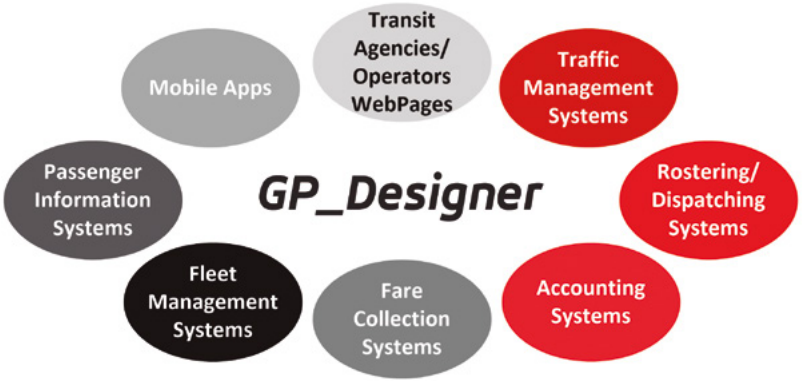


GP_Designer DESIGNER ALSO FEEDS OTHER SYSTEMS

GP_Designer provides a complete set of printouts and reports for timetables and schedules (blocks, duties).

It also **interacts with downstream systems** as Traffic management systems, mobile applications, webpages of transit agencies/operators, connection browsers, accounting systems, rostering / dispatching systems, Fleet Management/ Passenger Information Systems and Fare Collection Systems, provided by GMV or third parties. The system supports s**everal standard protocols** / **models**: VDV 452, VDV 453, VDV 454, Transmodel, GTFS, TransXChange, others...

On the other hand, ***GP_Designer*** can be fed by historical real data from Fleet Management Systems or Mobile Applications that help the system to provide better and more accurate solutions.



ALL STAKEHOLDERS ENJOY ONE COMMON TOOL. *GMV Planner* ECOSYSTEM

GP_Designer provides timetable planning, connections synchronization and scheduling for different types of transport (bus, tram, trolley-bus) and for different operators jointly in an integrated way in one single common tool. It is also possible to import their timetables for synchronization purposes. Thus, it is aimed at both authorities and operators.

GP_Designer can be **augmented with the rest of modules offered by *GMV Planner*** as a global management system for resources planning within an integral solution. ***GMV Planner*** is a world class set of software modules currently supporting the daily activities of approximately **30,000 vehicles and around 1,000 operators** (urban, intercity, rail and emergency services...).

The engine of **artificial intelligence and algorithms with multi-criteria-based mathematical optimization techniques** is flexible and mighty as a result of the cooperation with the Polytechnic University Tadeusz Kościuszko of Krakow. ***GP_Designer*** **reduces the operating costs** and improves the public transport services offered, **increasing the Return of Investment** (**ROI**) in a very short time. It saves time-consuming tasks by working quickly and efficiently with a significant amount of data in an integrated way (for instance: scheduling **time is reduced 10 to 15 times**).