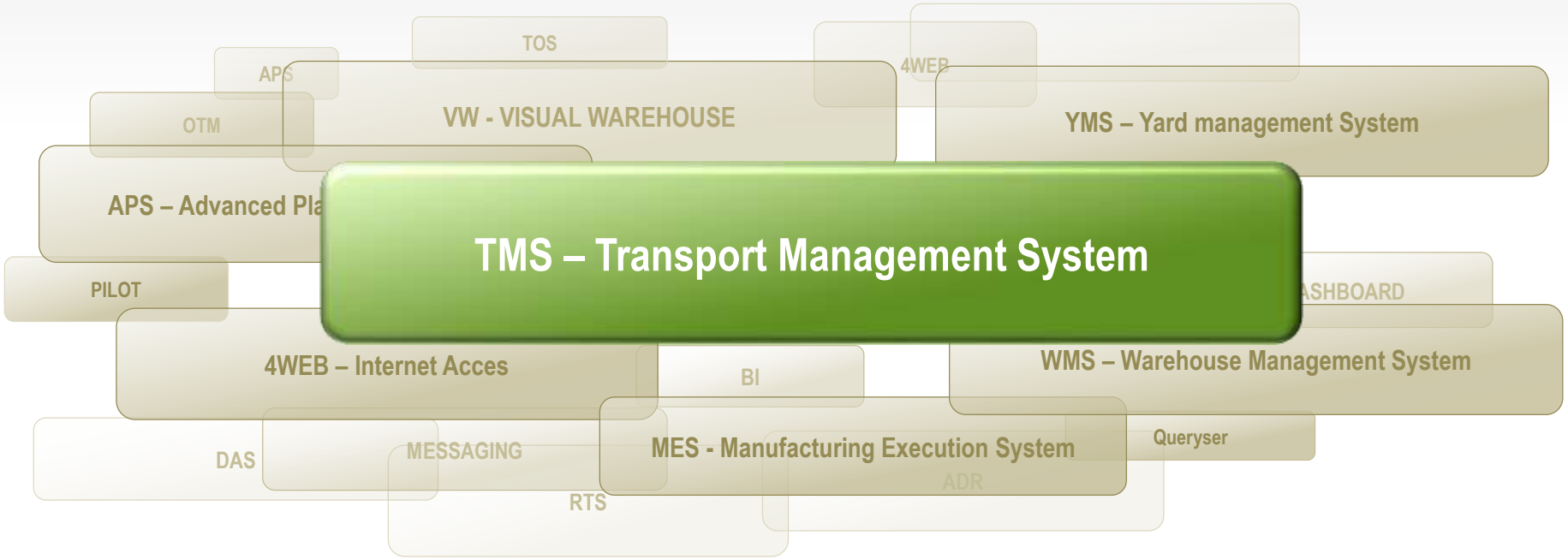
Qguar TMS

Transport Management System

Quantum Qguar Sp. z o.o.

QGUAR TMS – one of our many SCE systems



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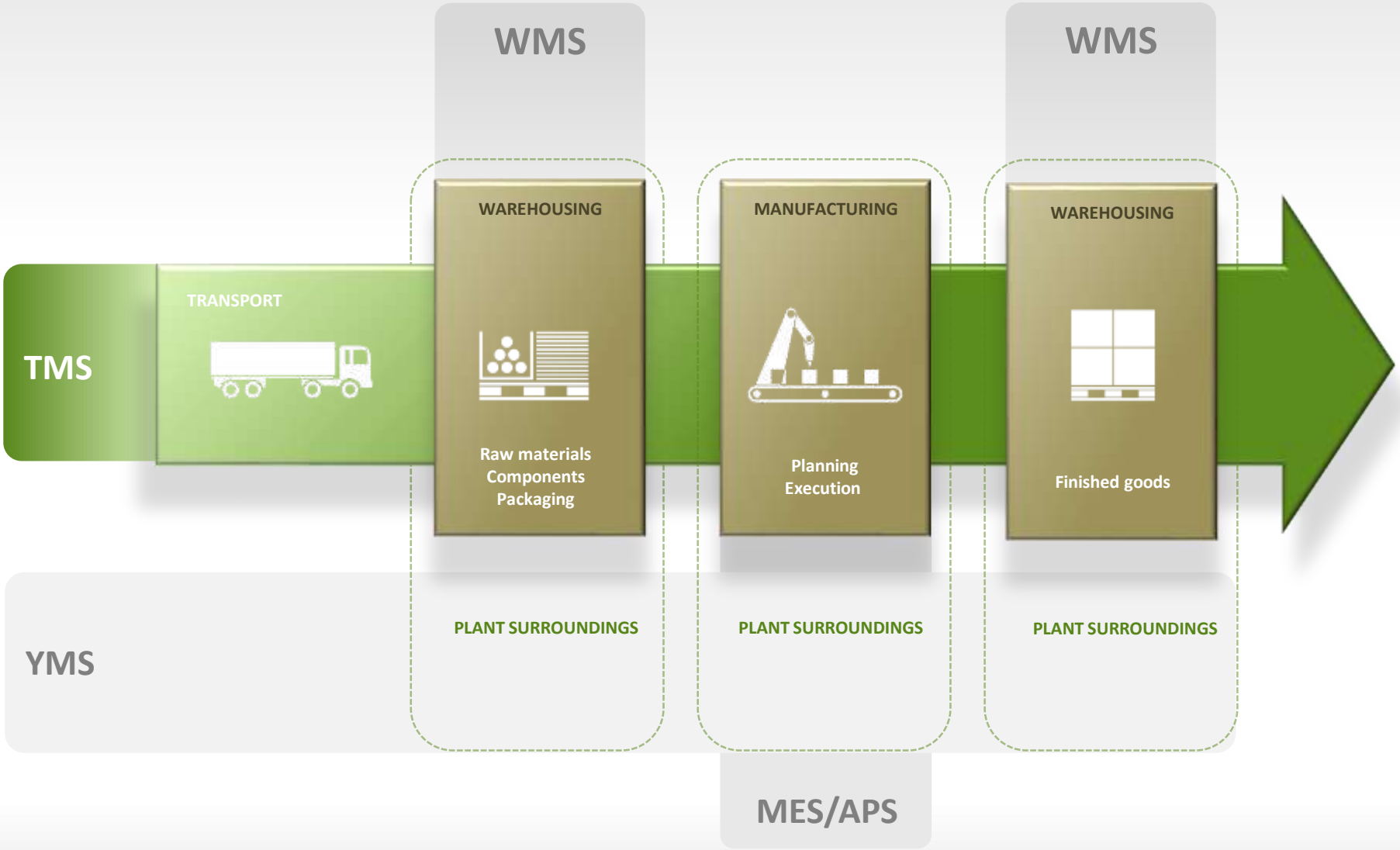
QGUAR TMS according to SCM



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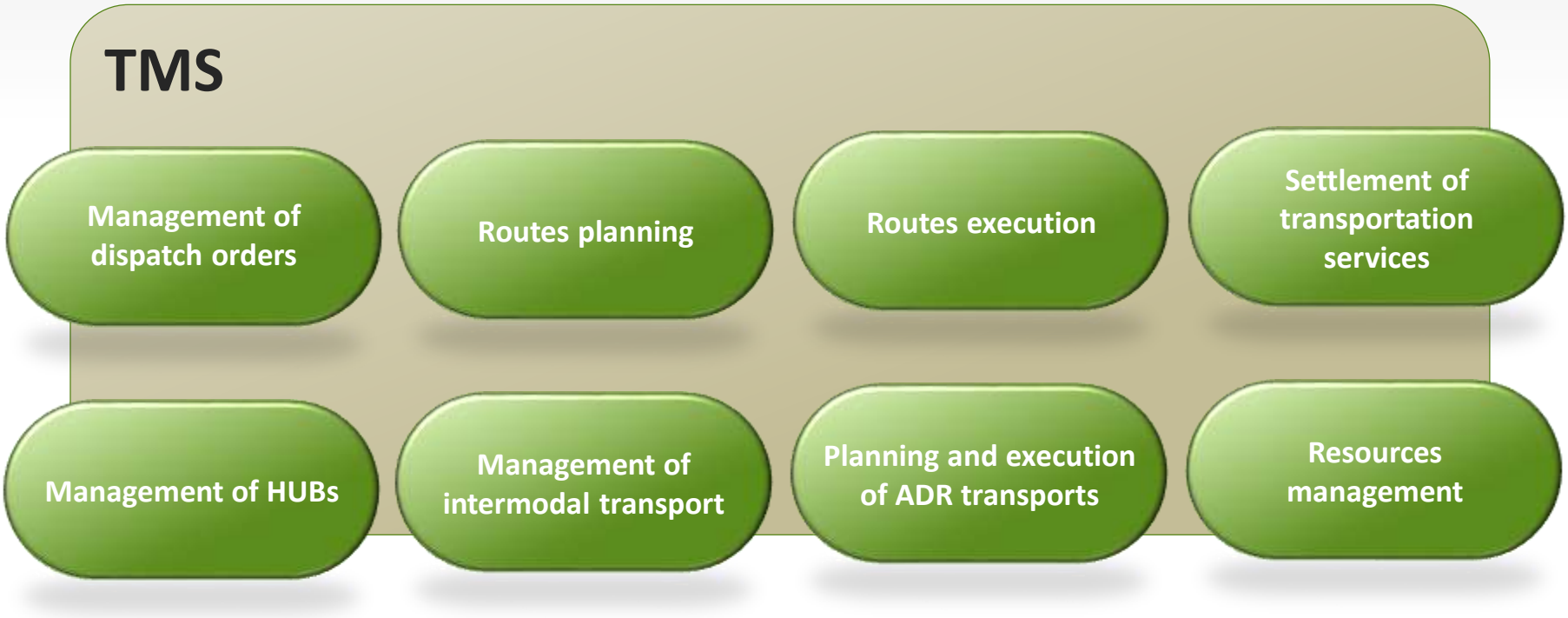
Main functional blocks of QGUAR TMS



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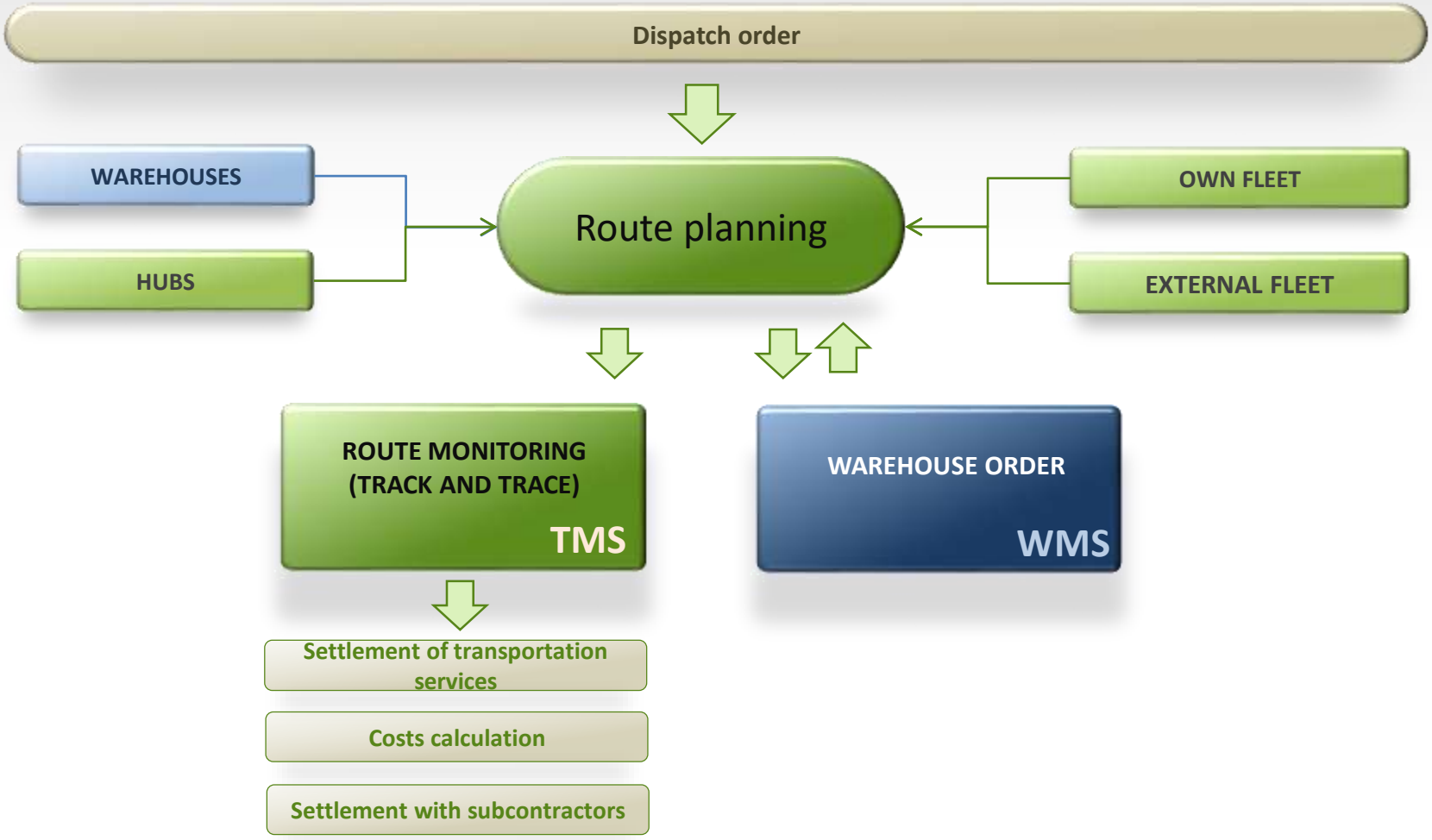
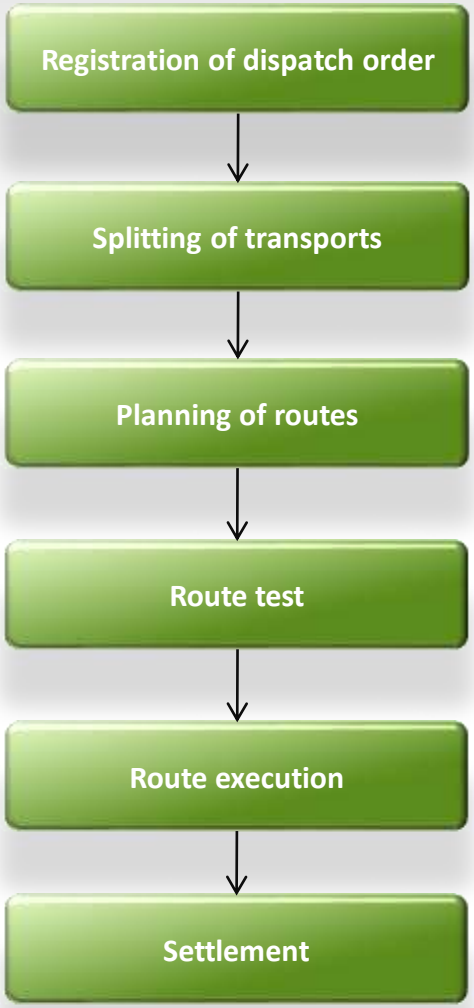
Main functional blocks – process approach

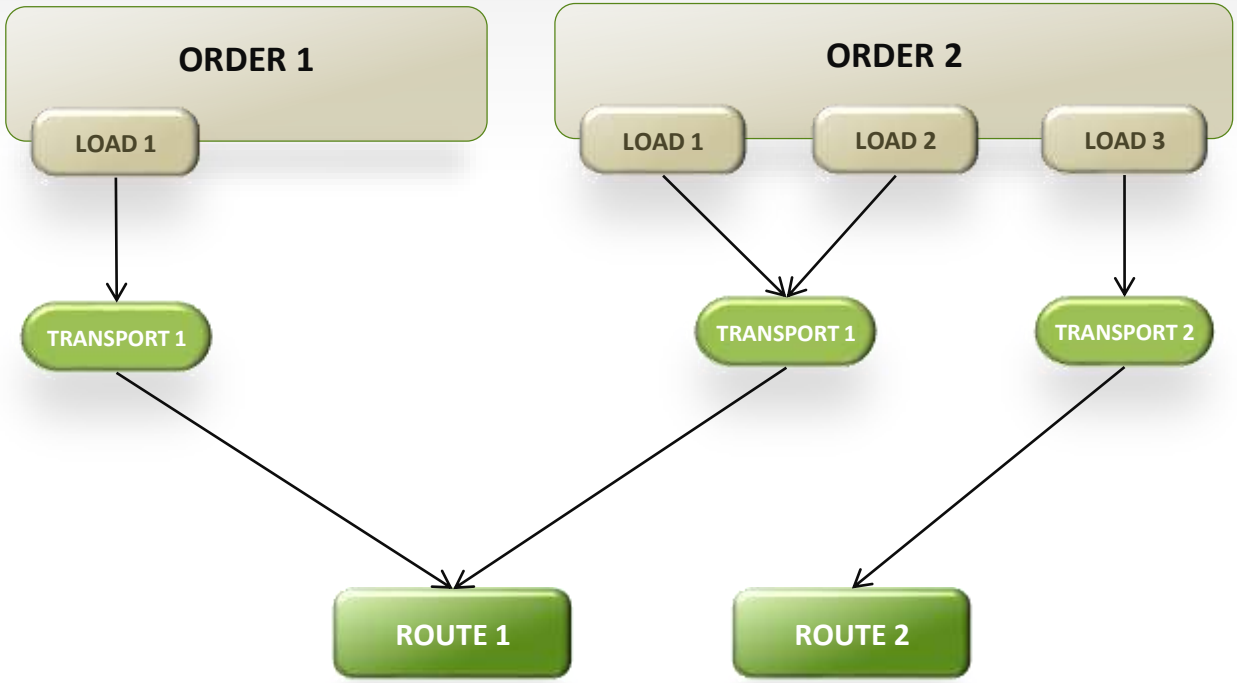


Basic terms

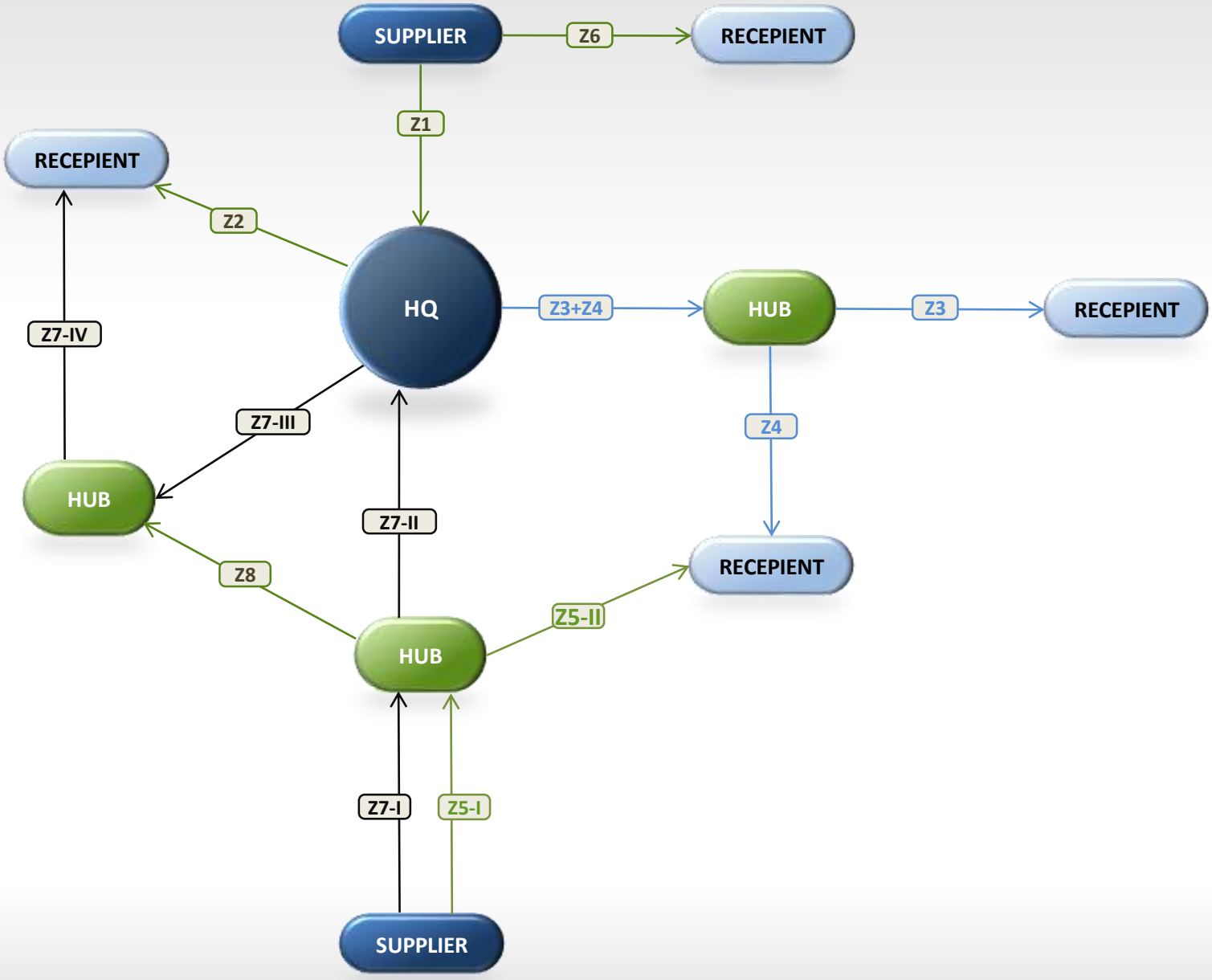
DISPATCH ORDER	order to perform transport of goods (calculated into load units), their delivery at a specified date and time, at a specified place, to a specified recipient, not necessarily transported by the same means of transport.
COMPOUND DISPATCH ORDER	set of Dispatching Orders, typically having the same common feature, like: the same ordering customer, the same, common price
LOAD	Defined number of homogenous goods transported between 2 locations as a part of one dispatch order. Load – means goods with the same features and requiremens from transportation point of view.
TRANSPORT	item on the waybill and a transport order, using an assigned means of transport, for a specified quantity of load units loaded (e.g.: pallets), transported at the same time, locations, dates and times of their loading and unloading.
ROUTE	one way of one means of transport, having 1 start, 0..n intermediate stations and 1 end, at each station it is possible to load and unload the load units, the route executes 1..n transports assigned to it, as entire or partial dispatching order.

Course of transportation process





Transport network model



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Transport network – management model

- ✓ Grouping of orders into routes
- ✓ Assignment of transport means
- ✓ Possibility of transportation through HUB
- ✓ Possibility to split the loads and their execution on different routes and transport means.
- ✓ Possibility of routes planning by using reloading points (HUBs)
- ✓ Possibility of multi stage dispatch order execution with controll of:
    - Line haul (to the HUB) and transport to the final destination point
    - Transport with load splitting
    - Combination of both
- ✓ Centralized of dispersed planning (done in the HUBs)
- ✓ Possibility to group the routes on following stages
- ✓ Management of HUBs hierarchy

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QGUAR TMS – supported technologies

GPS

Tracking of processes in SCM

GPRS

Sending of package GSM data

GS1

Global system for barcoding of logistic units

RFID

Electronic tags

Dispatch orders – management model

Dispatch order registration
Manually of automatically (import from external system)

Consolidation of orders
Merging of few orders from one supplier, recepient, sender with the same locations into one order

Splitting of orders
Managment orders, which are too big for one transport

Linking of orders
Allows for common settlement of orders comming from one orderer

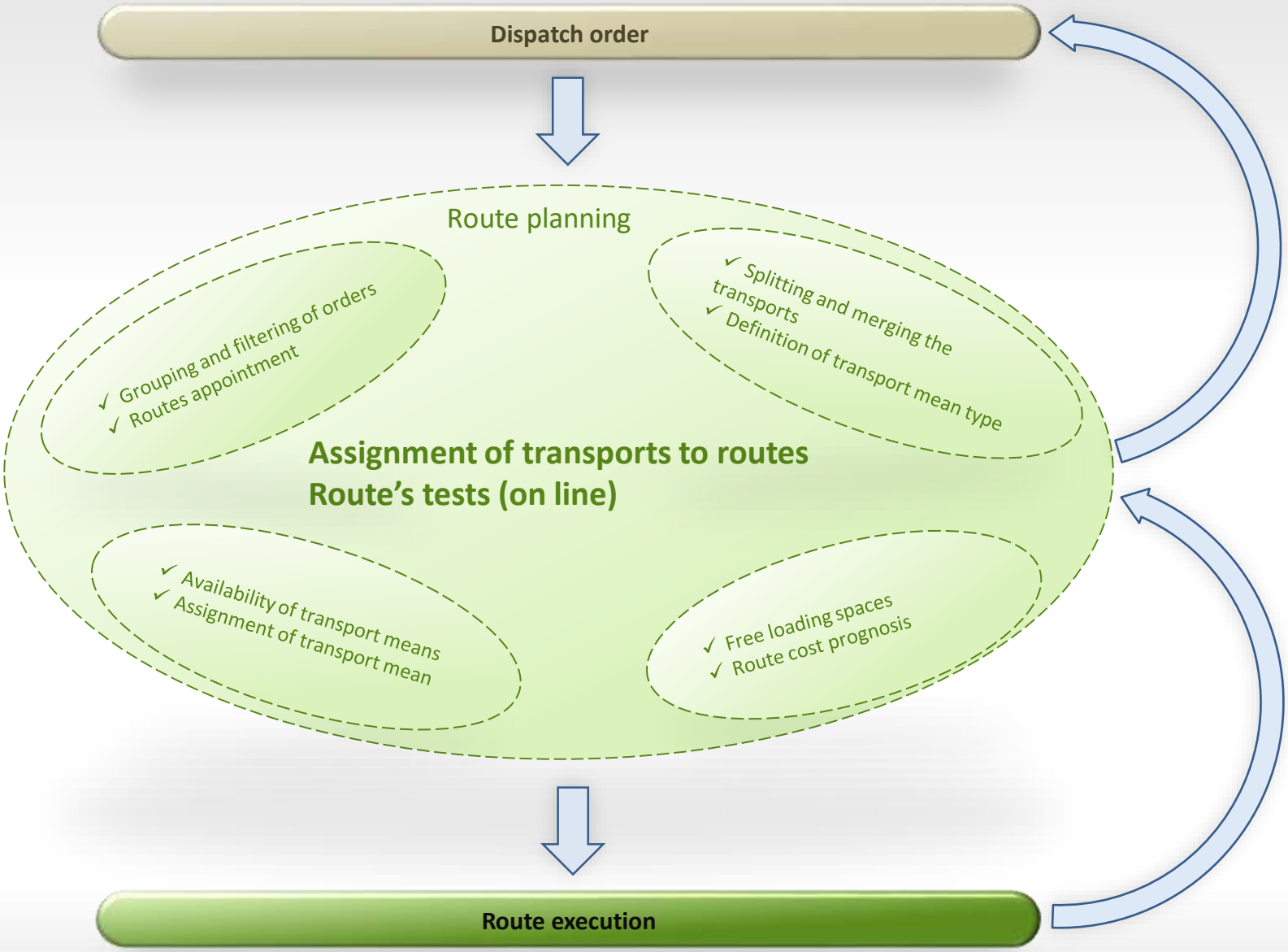
Settlement of orders
Calculation of price of order execution, based on defined pricelists and settlement processes

Choosing the forwarder
Searching the cheapest forwarder for the given order

Managment of full truck orders
System creates automatically route and blocks assignment of any other orders

Execution of dispatch orders
Real dispatch order's execution – plannOng and execution of proper transports and routes

Model of routes planning



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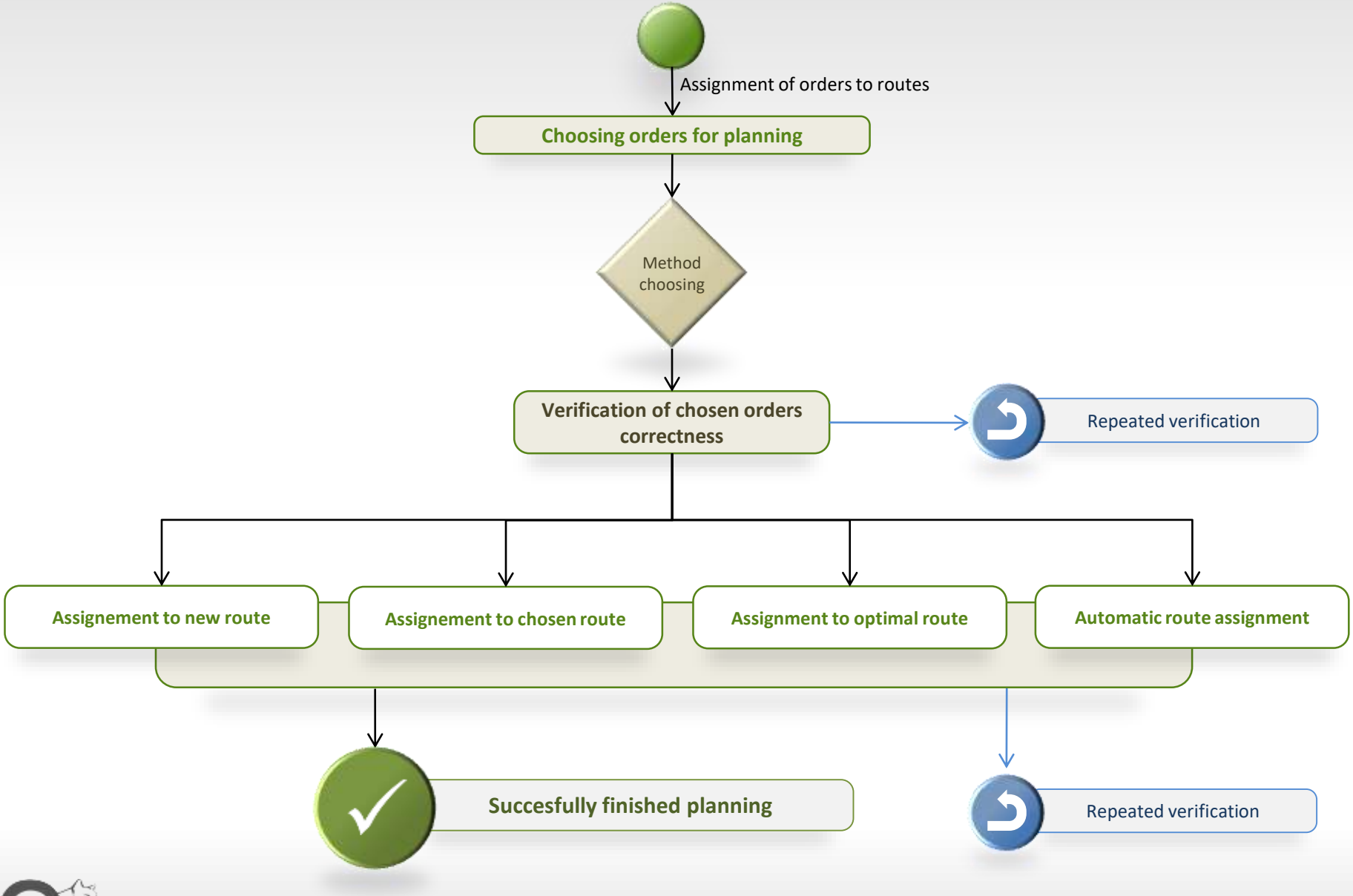
Assgnment of orders to routes



Optimization of routes

Grouping of orders into routes

Automatic methods

They allow for planning of many orders in the same moment.

- ✓ **Heuristic methods** – fast methods adjusted to the way of planning in a given company. They rely on choosing the propoer algorythm depending on specific nature of dispatch tasks.
- ✓ **Optimization methods –** rely on searching for better solutions for given orders. Those methods take into consideration the whole space of available solutions. Effectiveness depends on time of calculation

Manual methods

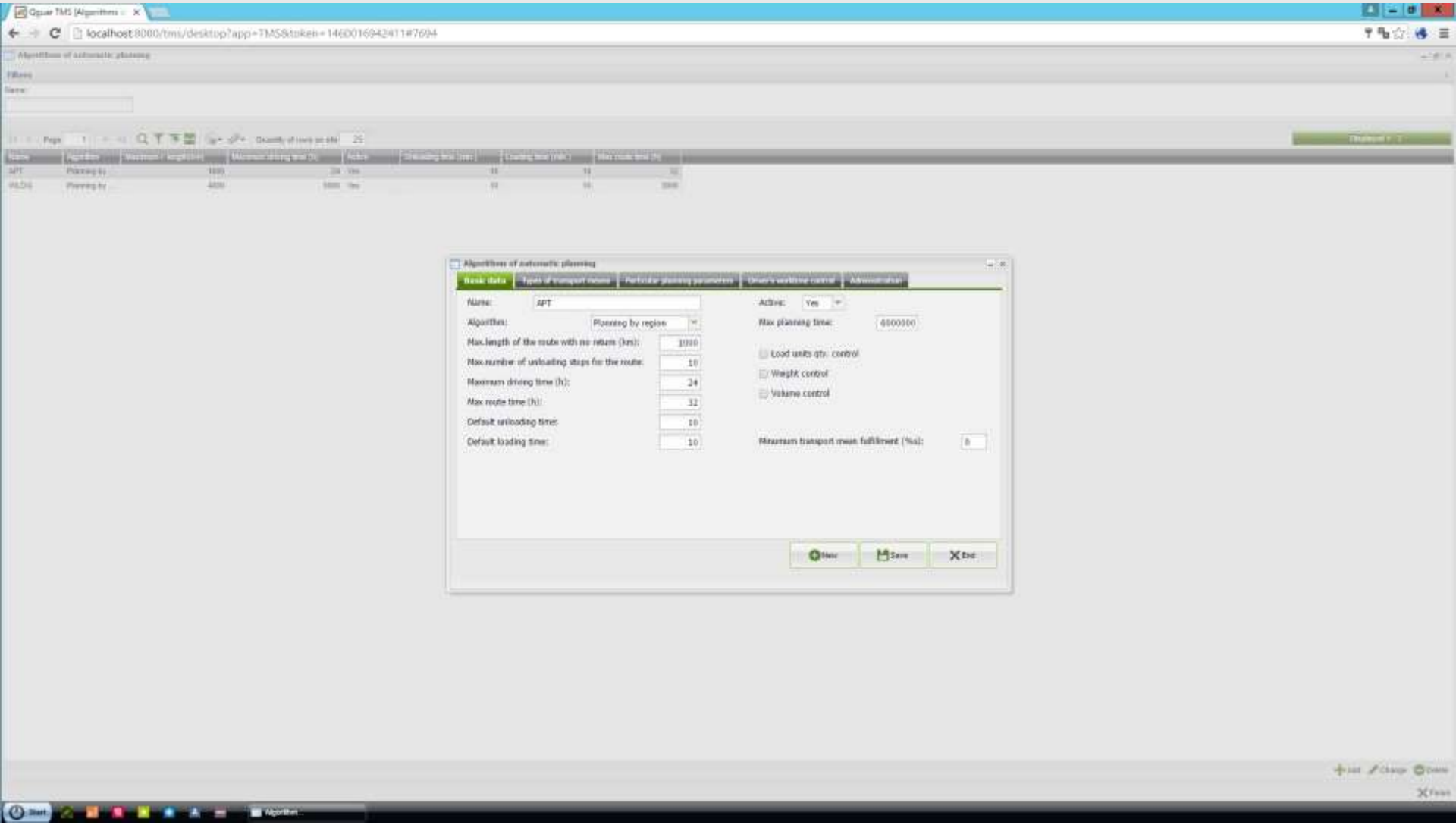
Those methods allow for manual planning of order assignment to the routes – in this way they enable management of untypical situations.

The manual methods base on data base functions, e.g. sorting of orders according to delivery hour, the same client, etc.

In this case automatic finding of existing optimal route for the chosen order is also possible.

Process of orders grouping is supported by route correctness check mechanism

Algorithms of automatic planning



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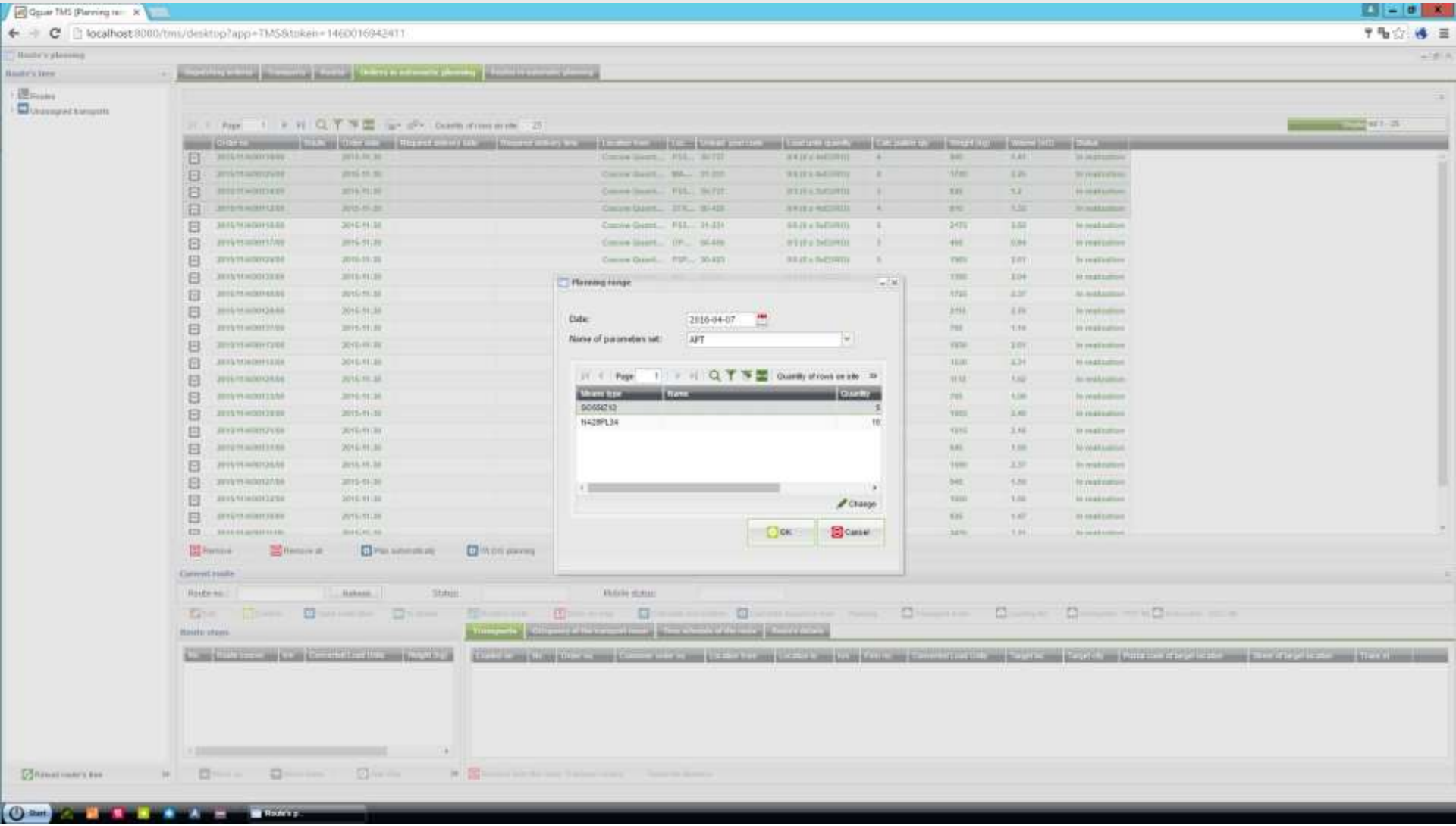
Automatic planning



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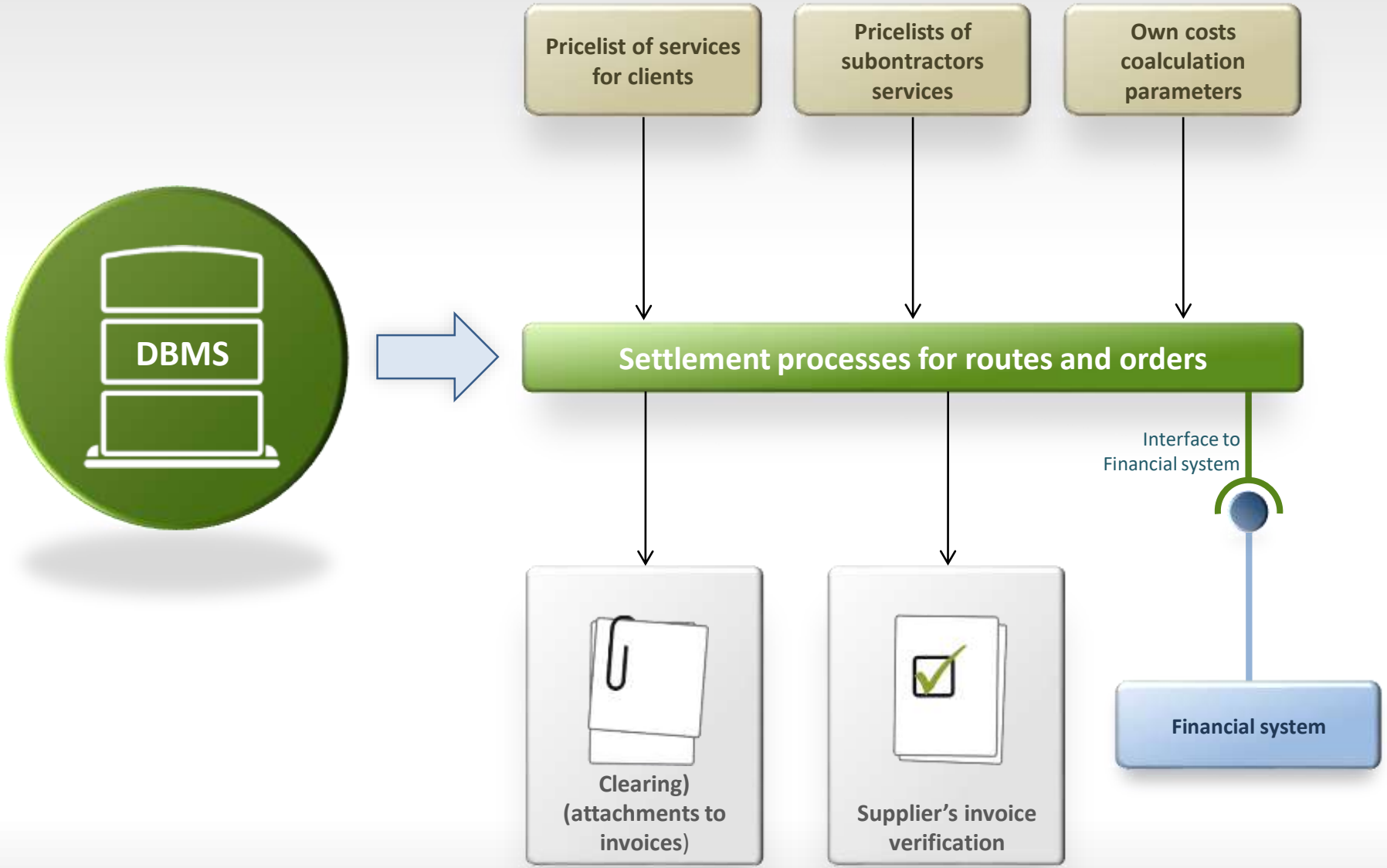
Controll over route execution

Management of route stops	Allows for changing the course of route during its executions, verification of arrival time, stoppage, loading/unloading time.
Management of orders during execution	System allows for adding new orders to the route during its execution.
Controll over drivers work time	Allows for controll over drivers work time on the basis of defined regulations Planning of relax time on the level of route stage is possible.
Registration of refuelling and mileage	System enables keeping records of refuelling and update the mileage records
Tracing of load units	Monitoring of transported load units history.

Settlement of services and costs



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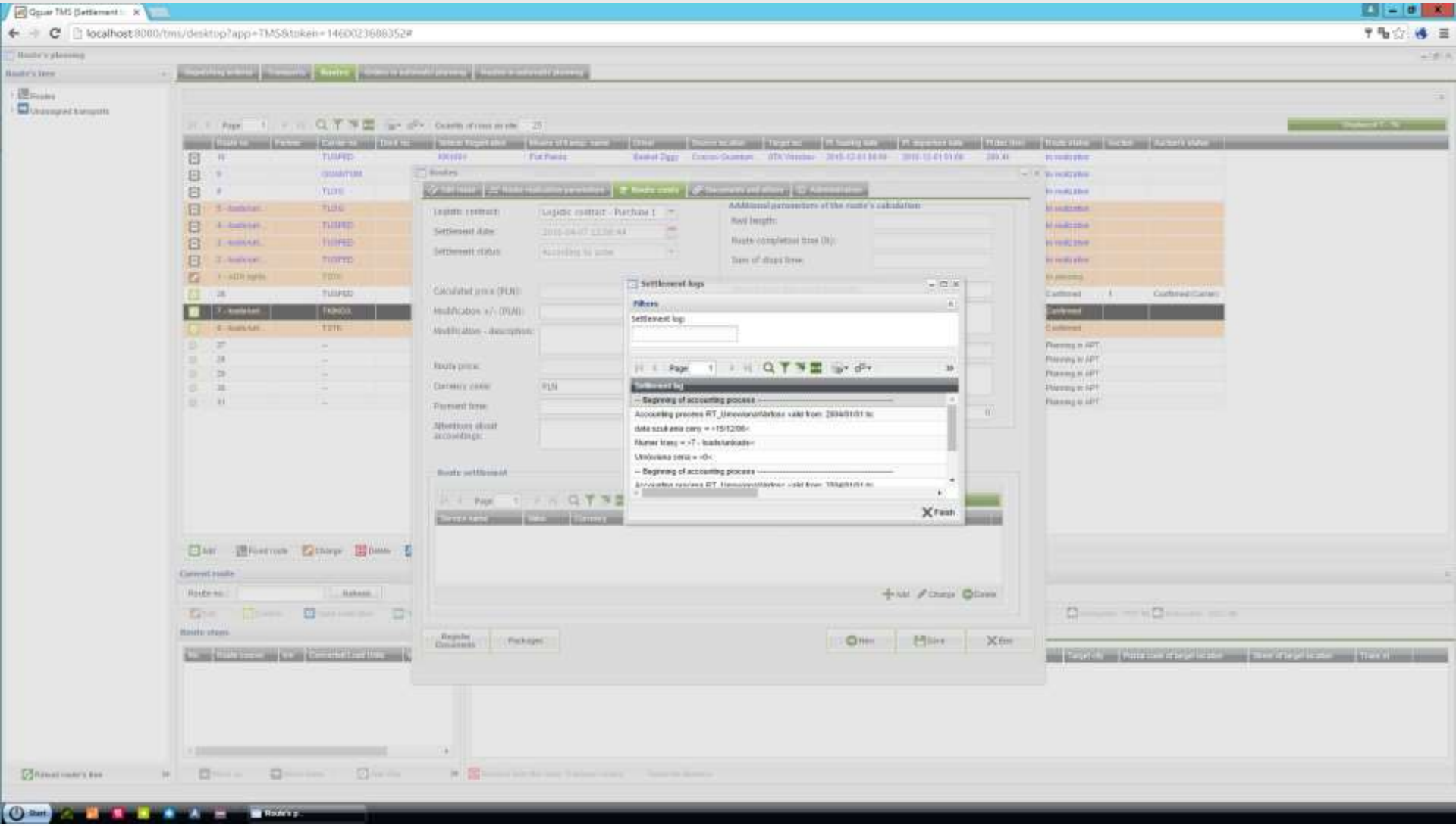
Settlement



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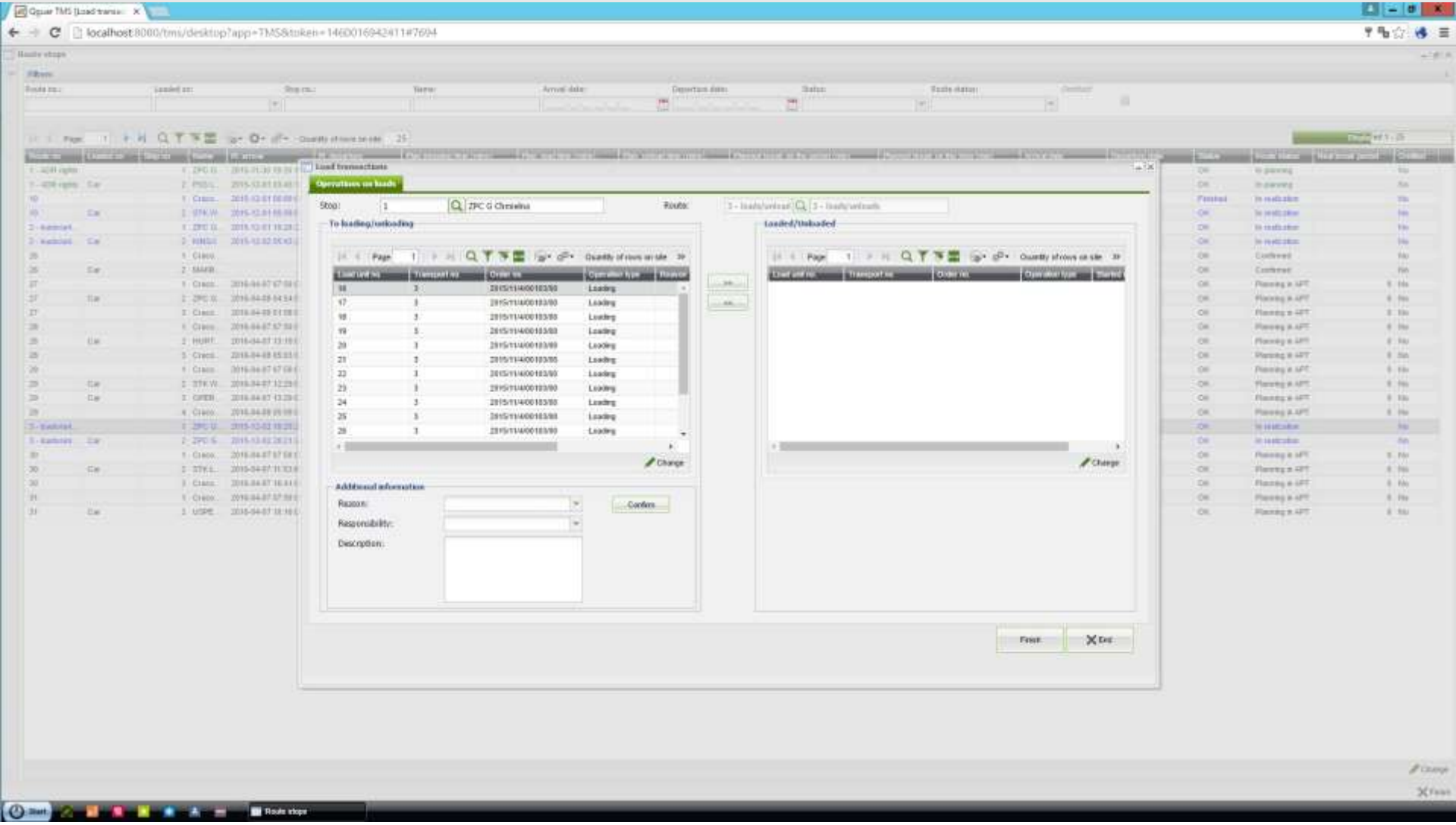
Hubs – managed processes

Management of reloading hubs and controll over loading and unloading

- Registration of loadings and unloadings
- Monitoring of actions
- Controll over stock levels in the hubs
- Stocktaking of load units
- Tracing of loads
- Monitoring of deliveries to the hub
- Monitoring of shipments

Loadings / unloading



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Intermodal transport management

Intermodal orders

Loactions with the feature - reloading:

- ☑ Automotive
- ☑ Railway
- ☑ Maritime
- ☑ Aviation

Intermodal transport consists in loads, which can be viewed in any constituent order (*)

(*) Constituent order: :

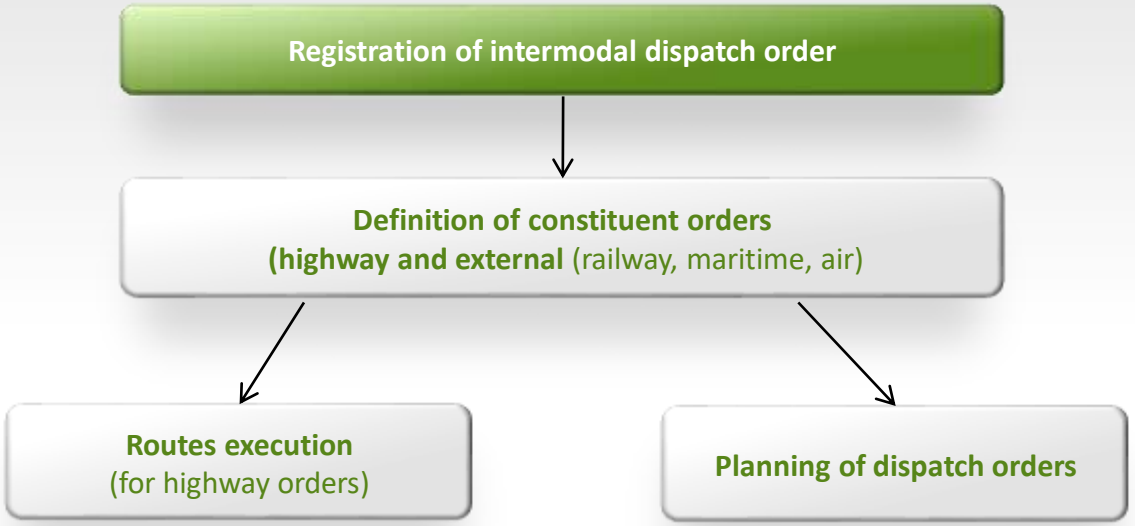
- ✓ external order: railway, maritime, aviation
- ✓ transport mean order : dispatch order, standard

Intermodal dispatches

- ☑ Railway
- ☑ Maritime
- ☑ Aviation

External orders with different types (railway, maritime, aviation) are grouped into dispatches (railway, maritime, aviation) in order to pass them on to adequate forwarder.

Management of intermodal transport



HIGHWAY ORDERS

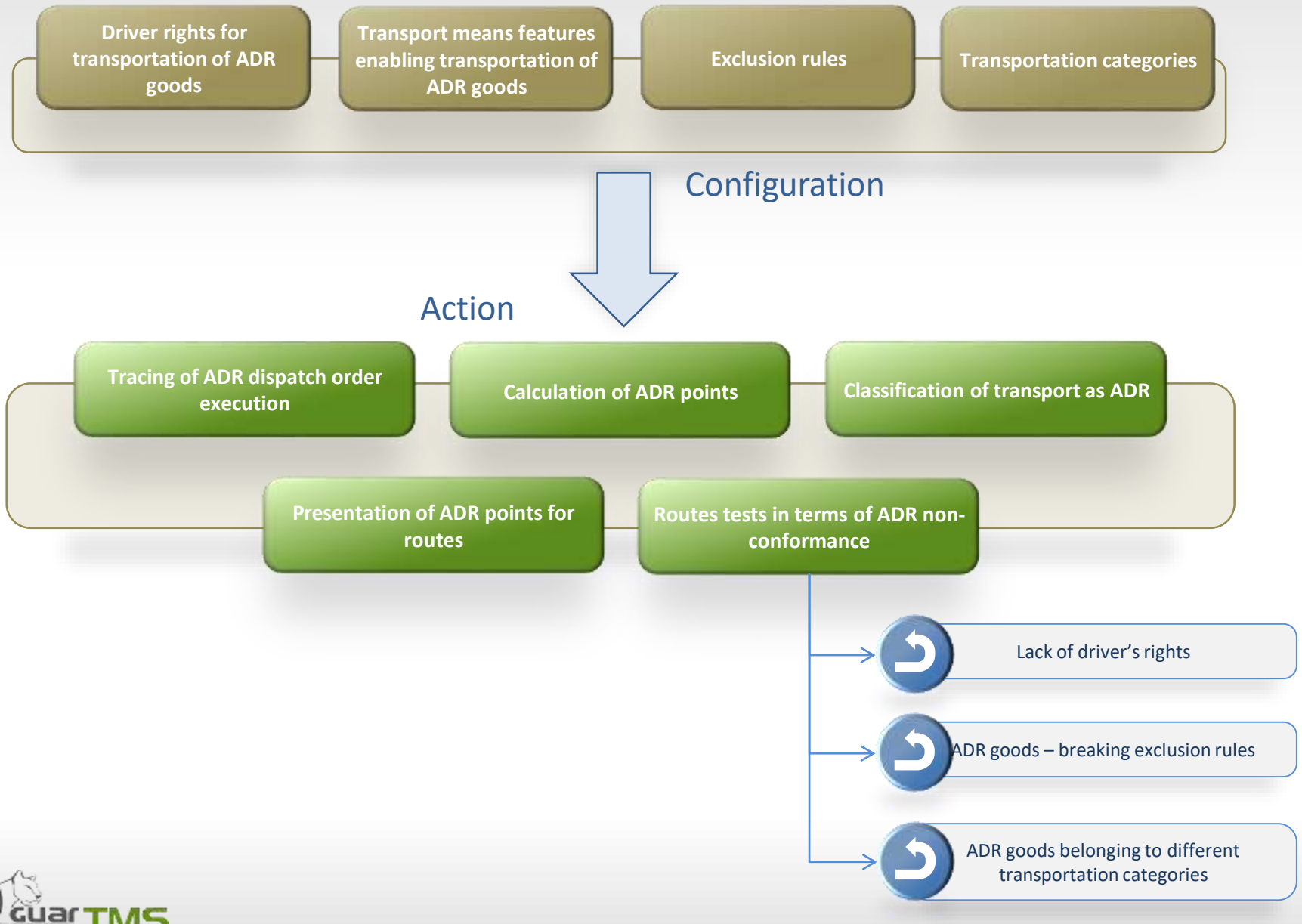
EXTERNAL ORDERS

- railway
- maritime
- aviation

DISPATCHES

- railway
- maritime
- aviation

ADR



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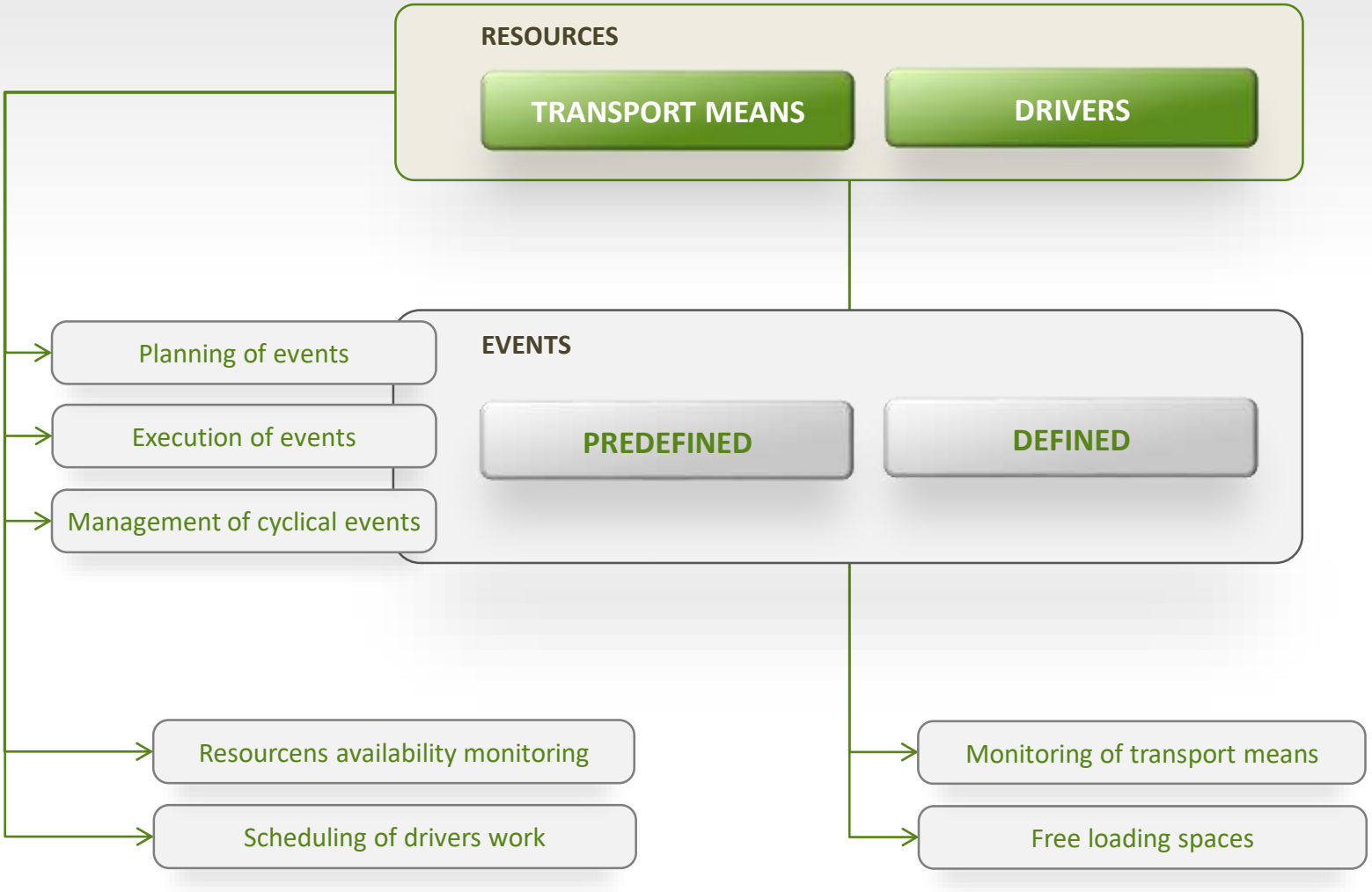
Resources management



Digical Map

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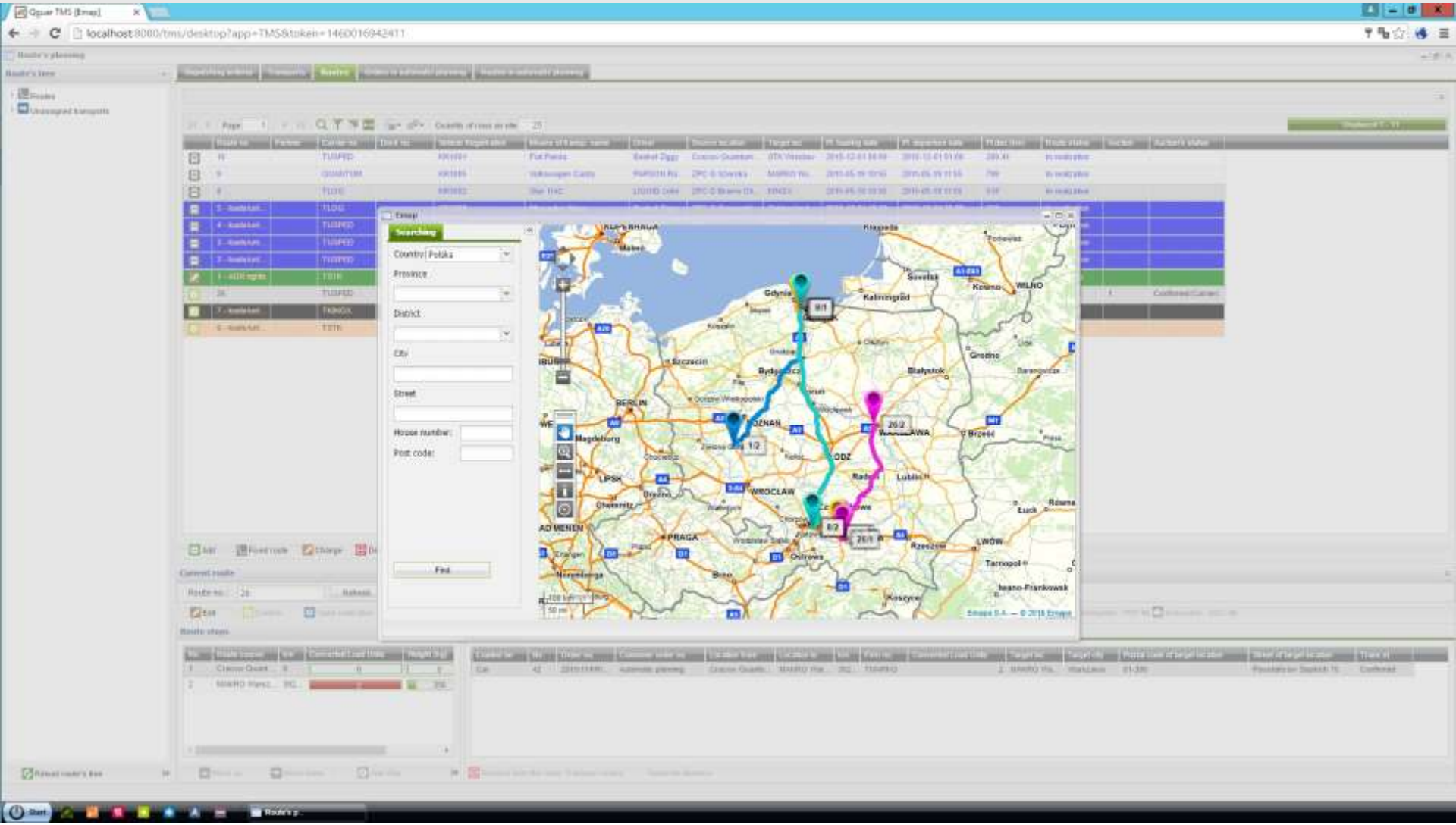
Digical Map



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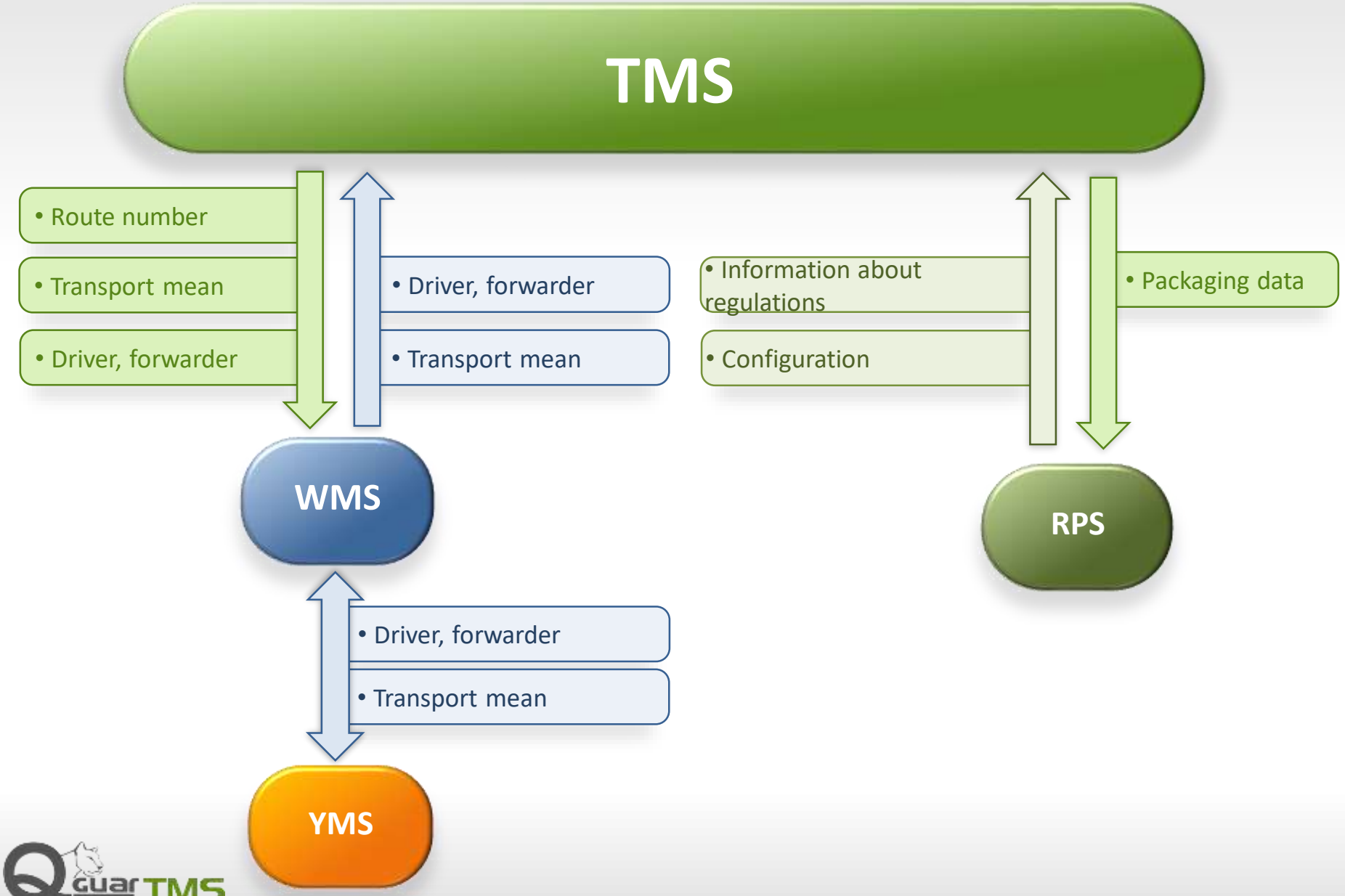
Interfaces

- ✓ Integration with digital maps (emapa, navigox)
- ✓ Cooperation with mobile equipment
- ✓ Archiving external documents (system enables recording in the database and reading from the database in order to save or read the external documents
- ✓ Database link with other Qguar modules
- ✓ Standard file interface
- ✓ Management of messages

Information exchange between QGUAR TMS and the other QGUAR modules



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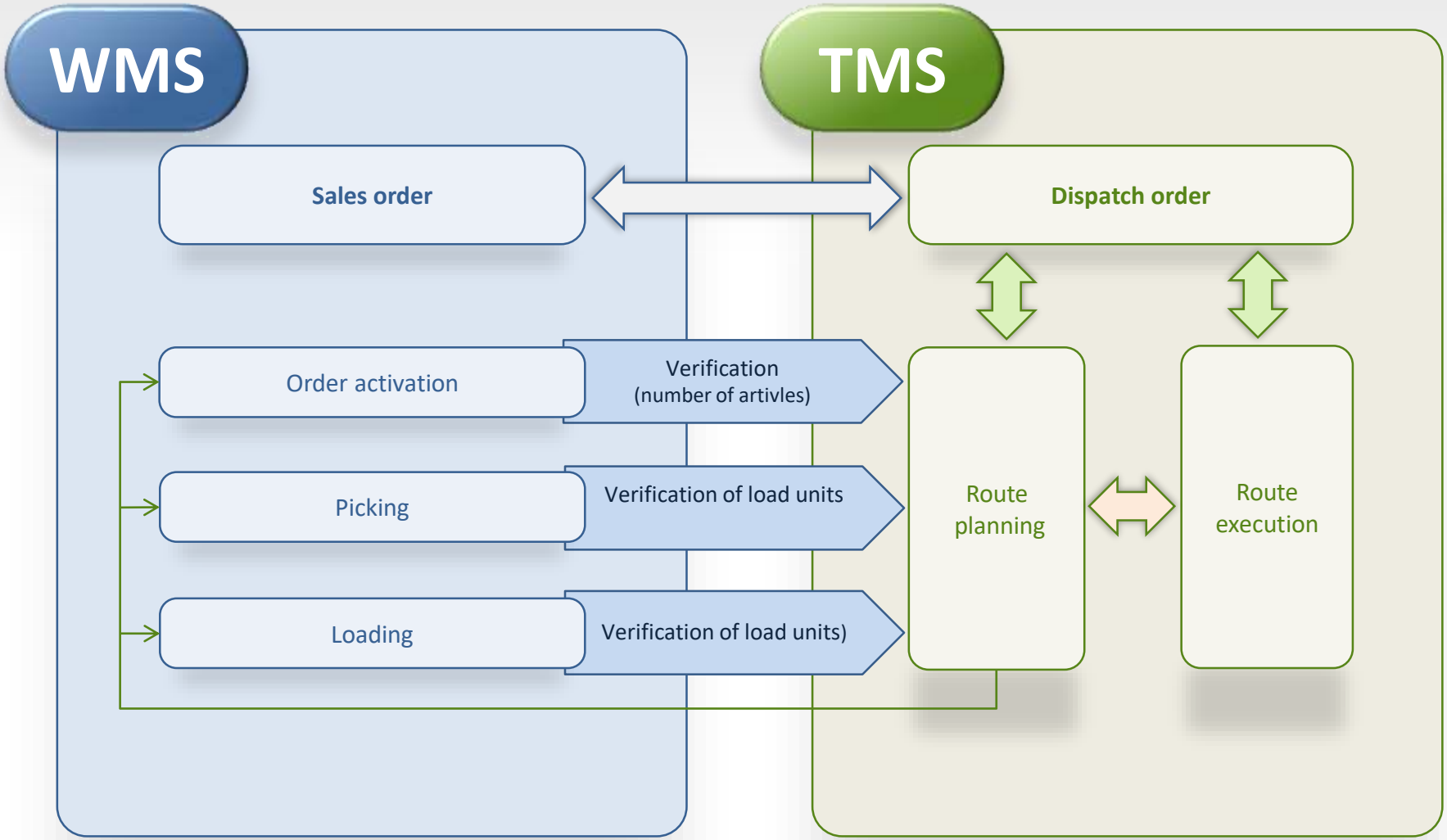
Power of detailed integration between WMS and TMS



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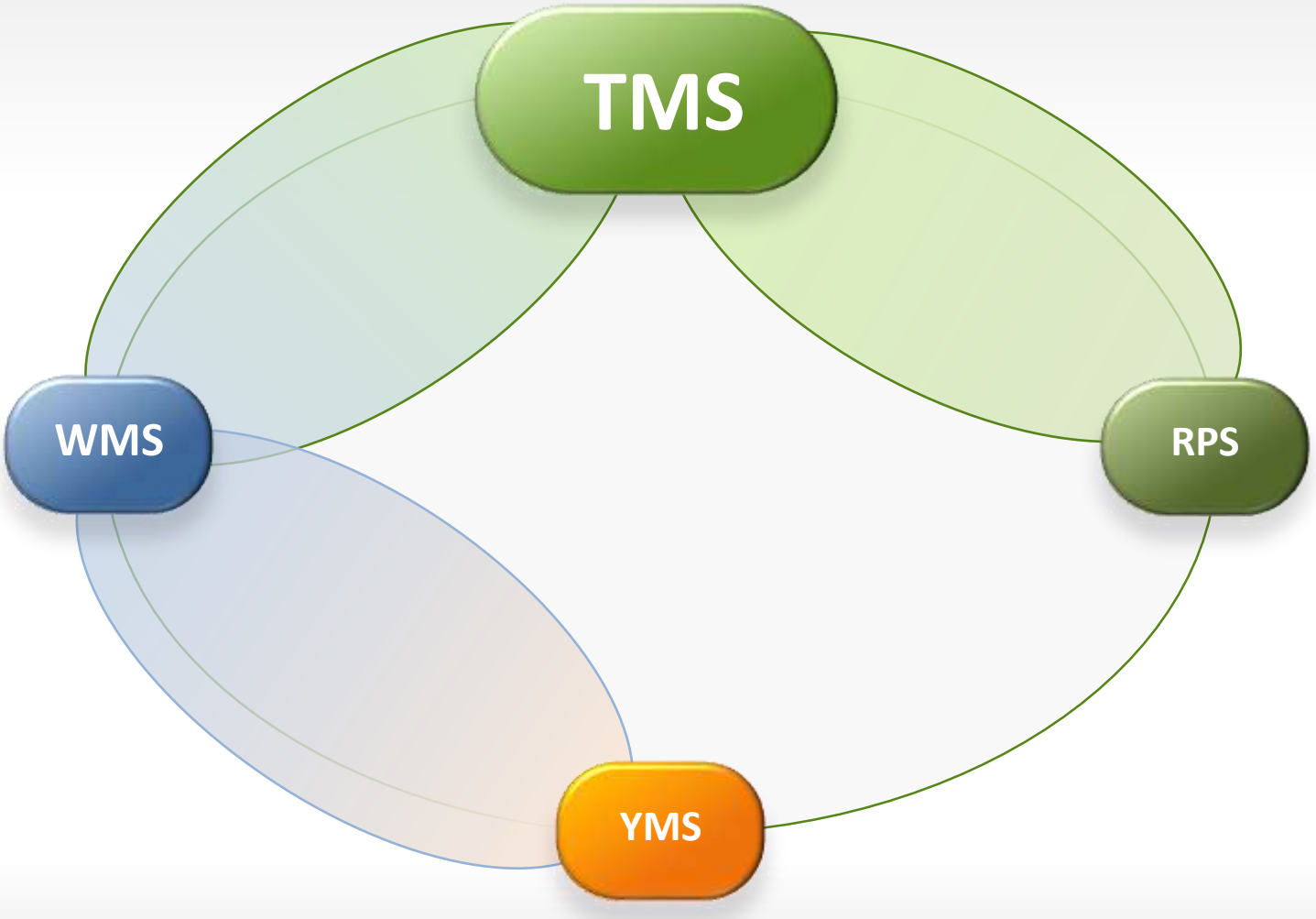
QGUAR TMS and other QGUAR modules



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Standard interface in the TMS

Messages:

SAR – Import of article master data

SKH – Import of company master data

TAD – Import of addresses

TTO – Import of dispatch orders

TSO – Simplified import of dispatch orders (with addresses)

TRT – Export of dispatches:

- **TRT.01** – export of routes
- **TRT.02** – export of routes and stops
- **TRT.03** – export of routes, stops and orders
- **TRT.04** – export of routes, stops, orders and load units
- **TRT.05** – export of routes and orders
- **TRT.06** – export of routes, orders and load units
- **TRT.07** – export of orders

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Reporting

TRANSACTIONAL DATA

- Executed dispatch orders
- Reloadings in the hubs
- Routes for executed dispatch orders
- ADR notofications
- Dispatch order
- Transport order
- Loading list
- List of planned loadungs/unloadings in the HUBs
- ADR order

STATISTICS AND ANALYSES

- Drivers master data
- Conflicts of postal codes
- Report of filling the transport mean
- Delays on routes
- Level of filling the transport mean by dispatcher

- Weekly dispatch report
- Specification forforwarder
- Cost decretations
- Order's profitability
- Settlement of drivers
- History of changes on the route
- Annual ADR reports

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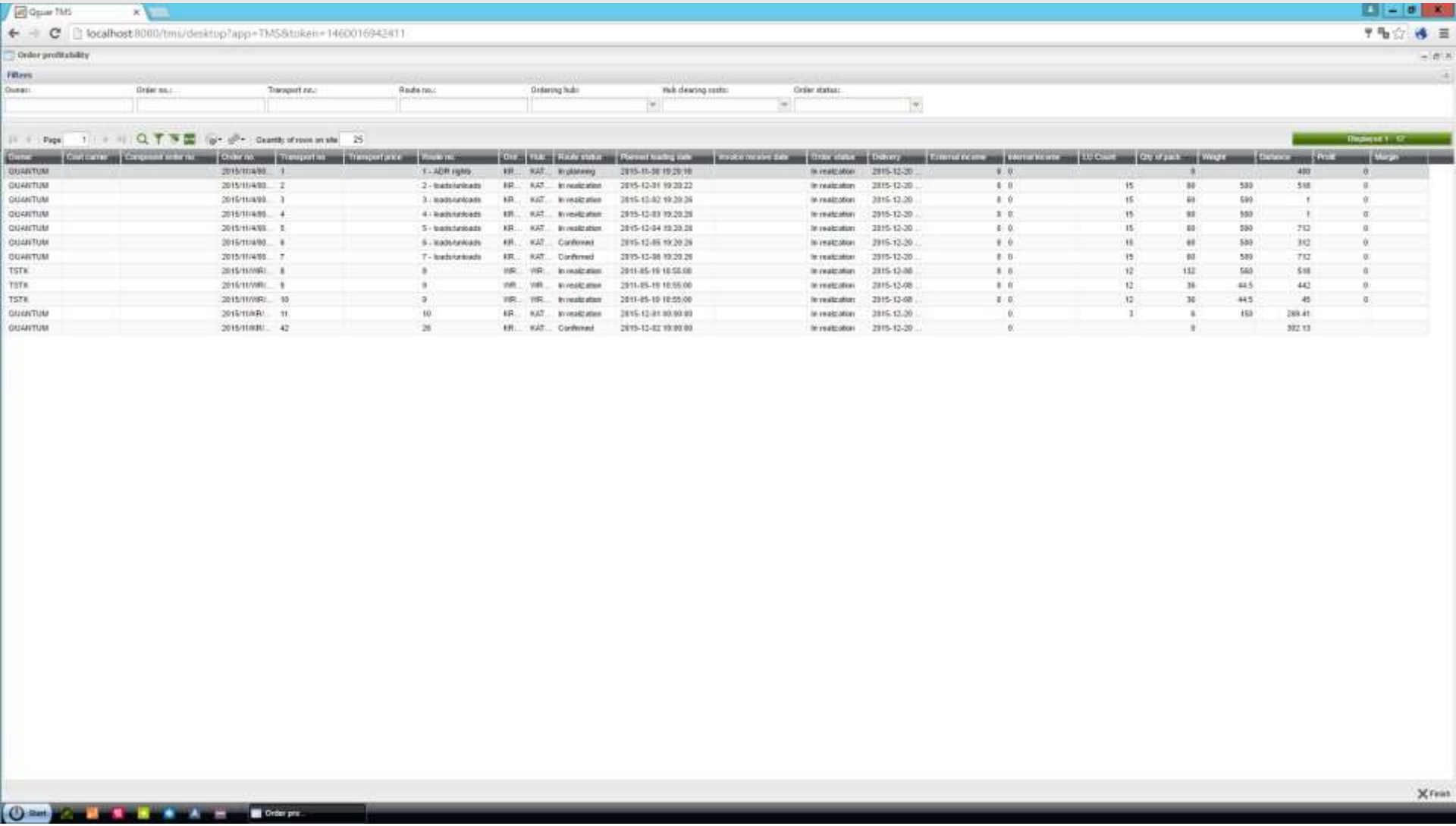
Order's profitability



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Reporting capabilities

I-Net Crystal Clear

- ✓ documents
- ✓ labels
- ✓ Current and statistical reports

Senting the printout directly to printer or with with view possibility on the screen

Possibility to change the existing printouts

Creation of own printouts by the user

Controll queries

Defined as query in SQL

Fast speed of creation – under condition of knowing the database structure

Possibiity to create own filters

Effect:
Classic table of Qguar

Instert of own lists into menu

Export od data into MS Excel

Export of any table from Qguar

Possibility to choose exported columns

Further processing of data in MS EXcel

Advantages of QGUAR TMS

- ✓ Monitoring of events connected with transportation
- ✓ Optimization of transport processes
- ✓ Improvement of transport services settlement
- ✓ Logistic costs reduction
- ✓ Processes automation
- ✓ Possibility to carry out statistics and analyses
- ✓ Fast access to historical data
- ✓ Precise cost controll
- ✓ Improvement of work efficiency

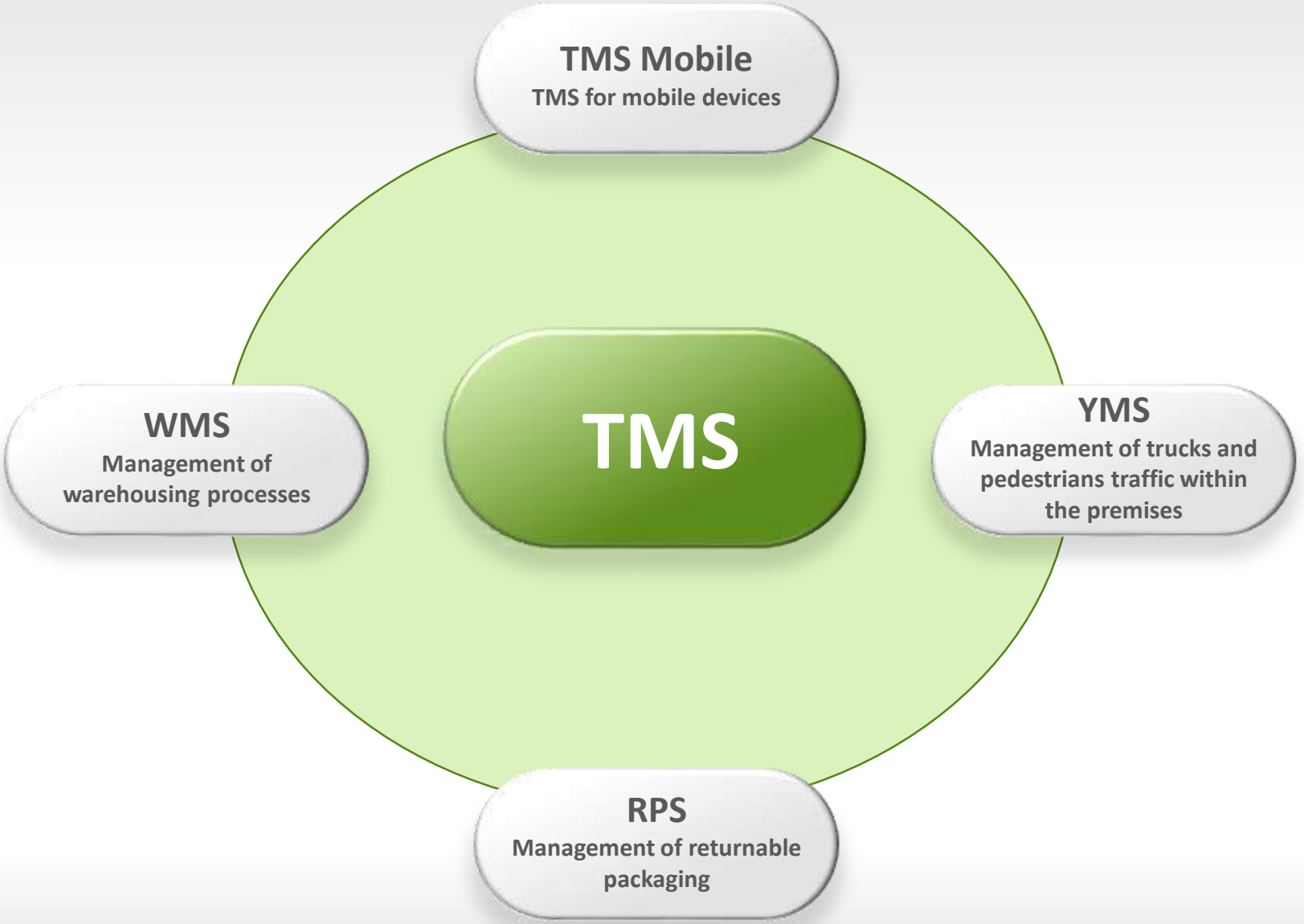
Work improvements indicators after QGUAR TMS implementation

- ✓ Reduction of time needed for servicing the transport events
- ✓ Decrease of transportation costs
- ✓ Syncronisation of processes between hubs
- ✓ Better detection of conflicts regarding the planned transport mean and its assignment to other earlier planned routes
- ✓ Better detection of conflicts regarding the availability of the load compared with planned route start
- ✓ Automation of route planning
- ✓ Optimization of route planning
- ✓ Improvement of forwarding documents creation process
- ✓ Controll over road completion
- ✓ Time schedule of arrivals, departures, unloadings, loadings.

Chosen KPIs

- ✓ Number of orders completed
- ✓ Number of delayed transports
- ✓ Conformity of time of delivery with the required one
- ✓ Conformity of load availability with the planned date of route execution start
- ✓ Income from transportation services
- ✓ Costs of transportation services
- ✓ Value of settled transports
- ✓ Number of settled orders/routes
- ✓ Average time of order competion
- ✓ Level of not fulfilled orders
- ✓ Level of fulfilled orders
- ✓ Average transport cost per forwarder
- ✓ Efficiency of orders

Additional Qguar Systems



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Thank you for attention!

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