Position Services

Road Control

RML file format

version 1.1

 http://www.position.cz

1 CONTENTS

2 HISTORY

Version	Published	Author	Description
1.1.5	8.1.2015	J. Melechovský	
1.1.5	13.2.2015	J. Melechovský	Added warning concerning some properties of the DT_VEHICLE structure
1.1.5	25.6.2015	J. Melechovský	Some missing vehicle properties added
1.1.5.	30.6.2015	J. Melechovský	Warning about the fleet homogeneity removed
1.1.5	4.9.2015	J.Melechovský	New properties added to structures DT_VEHICLE and DT_NODE
1.1.5	22.10.2015	J. Melechovský	New property <waiting_time> added to structure DT_ROUTE_NODE
1.1.5	4.2.2016	J. Melechovský	New properties added to structures DT_VEHICLE and DT_NODE. Attribute "id" added to structure DT_ROUTE
1.1.6	27.5.2016	J. Melechovský	Property <node_failures> added to structure <result> Attribute "relaxed_access" added to structure DT_ROUTE_NODE
1.1.7	16.01.2018	J. Melechovský	New properties added to structure DT_VEHICLE
1.1.8	05.02.2020	J. Melechovský	Description of DT_DRESTRICTION added

3 GENERAL STRUCTURES

3.1 DT _SETTINGS

`<setting type="">`	Computation settings Possible values of the "**type**" attribute:

TimeoutLimitInSeconds	Timeout in seconds limiting task computation time Default value: 0 (unbounded)
resultcontents	Detailed routes itinerary is/is not required
BypassTimeCostlyOperations	If true, the algorithm skips time costly iterations if the execution time exceeds a time limit. Default value: 1 (true)
IterationTimelimit	Timelimit in seconds per main iteration applied if "BypassTimeCostlyOperations" is set to true. Default value: 0 (Internal limit applied)
IncludeVirtualRoutes	Virtual routes (i.e. routes for which additional vehicles are required) shall or not be written to the result. Default value: true

3.1.1 TIMEOUTLIMITINSECONDS

Description:

Timeout in seconds limiting task computation time.

Default value: 0 (unbounded)

3.1.2 RESULTCONTENTS

Description:

Specifies the required data in the result. If the detailed route itinerary is not required, the total calculation time might be reduced significantly. The returned result then contains the route schedules, but the binary data of the detailed itinerary are not present.

Default value: 0x0002

0x0001	Result without the detailed itinerary data
0x0002	Result including the detailed itinerary data

3.2 DT_DRESTRICTION

`<route_drestriction type="" value="">`	Definition of restricted traffic capacity on a route segment Allowed values of attribute "**type**": 0 — Relative restriction. Attribute "**value**" accepts values from interval [0;1]. "**value**" = 0 means fully restricted route segment, "**value**" = 1 means no restriction on route segment 1 — Absolute restriction. Attribute "**value**" stores additional time needed to pass through route segment in minutes

3.2.1 ROUTE_DRESTRICTION

Description:

Coordinates of place in which the traffic capacity is restricted..

Format: PROJECTION_ID;X;Y example WGS-84; 50.073897; 14.433820

Default value: none

3.3 DT_VEHICLE

`<vehicle>`	
`<id>`	Mandatory parameter, unique vehicle Id within the task frame
`<label>`	Optional parameter, vehicle name
`<type>`	Optional parameter, vehicle type Enabled values: Auto Bus Pedestrian Truck Van Default value: Auto
`<profile_label>`	Optional parameter, vehicle profile name
`<accepting_ traffic_restrictions>`	Optional parameter, vehicle respects/ignores traffic restrictions (see structure DT_DRESTRICTION) Enabled values: true — Vehicle respects traffic restrictions false — Vehicle ignores traffic restrictions Default value: true
`<type_special>`	Optional parameter for special assignment vehicles

	Enabled values: 0x0001 taxi 0x0002 delivery 0x0003 emergency vehicles
`<route_settings>`	Optional parameter, route character specifications
`<setting type="">`	Route character specifications Enabled values of the "**type**" attribute: Route_mode – Route computation mode Route_directions – Accepting directions Route_bypass_tollrd – Bypassing tollroads Route_enhanced_uturns – Enhanced U-turnability Route_legislative_restrictions – Local legislative restrictions Route_suppress_nothrougtr – Suppressing non-rideability (through traffic) Route_suppress_localroads – Suppressing local roads (they are considered non-rideable when determining through traffic) Route_enforce_dataspeeds – Using speed catogories stored in data layers (according to vehicle type)
`</route_settings>`	
`<features>`	Optional parameter, enhanced settings of vehicle and cargo
`<feature type="">`	Vehicle dimensional and cargo specifications Enabled values of the "**type**" attribute: hazmat – Hazardous material height – Height of the vehicle (cm) weight – Weight of the vehicle (kg) weightperaxel – Weight per axle (kg) length – Length of the vehicle (cm) width – Width of the vehicle (cm) numoftrailers – Number of trailers numofaxles – Number of axles kpralength – KPRA length (cm) hazmatpermit – Permits for hazardous materials specialcargo – Additional cargo specifications
`</features>`	
`<speed_highway>`	Optional parameter, vehicle speed on highway (km/h)
`<speed_class1>`	Optional parameter, vehicle speed on class 1 roads (km/h)
`<speed_class2>`	Optional parameter, vehicle speed on class 2 roads (km/h)
`<speed_class3>`	Optional parameter, vehicle speed on class 3 roads (km/h)
`<speed_village_road>`	Optional parameter, vehicle speed on local roads (km/h)
`<count>`	Optional parameter, number of available vehicles Default value: 0 (unbounded)
`<shift_interval>`	Optional parameter, vehicle work start and duration (only local time supported at the moment) ISO 8601 format "YYYY-MM-DDTHH:MM/PTxHxM". Only the interval alone is also supported (PTxHxM). E.g.: "2013-10-22T8:00:00/PT8H30M" or " PT8H30M"

<max_work_time>	Optional parameter, maximum driving time until the mandatory break in minutes.
<min_break_time>	Optional parameter, minimum break time in minutes
<initial_work_time>	Optional parameter, initial driving time in minutes
<service_time_as_break_time>	Optional parameter, the service time can be considered as the mandatory break time if its duration is at least as long as the break time duration. Enabled values: allowed denied Default value: denied
<costs_km>	Optional parameter, cost per km Default value: 1.0
<costs_ride>	Optional parameter, fixed ride cost
<idle_time_cost>	Optional parameter, cost per idle or waiting time at the customer
<cost>	Mandatory parameter, cost per time interval
<interval>	Mandatory parameter, time interval (in minutes)
<type>	Optional parameter, the type of the final cost calculation Enabled values of parameter <type>: 0 – the cost is calculated as the sum of the idle time cost at each customer 1 – the cost is calculated as the sum of the cost for every started idle time interval at each customer 2 – the cost is calculated for the total idle time in the route rounded up to the entire interval Default value: 0
</idle_time_cost>	
<capacities>	Optional parameter, list of vehicle capacities
<capacity type="">	Optional parameter, numerical capacity value Attribute "type" is optional and links to the "type" attribute of the <demand...> field (must be unique within the vehicle frame)
</capacities>	
<start_node_id>	Mandatory parameter, ID of the starting place
<finish_node_id>	Optional parameter, ID of the finish place
<availabilities>	Optional parameter, time intervals specifying when the vehicle is available
<availability>	
<interval>	Mandatory parameter, interval (only local time is supported at the moment) ISO 8601 format: "YYYY-MM-DDTHH:MM/PTxHxM" e.g.: "2013-10-22T13:00:00/PT1H30M"
</availability>	
</availabilities>	
<rctags>	Optional parameter, semicolon delimited string containing vehicle specifications (e.g.: "3P1 3602;crane")
<attributes>	Optional parameter
<attribute name="">	Vehicle attributes

	Enabled values of the "**name**" attribute: priority — Vehicle priority in the solution priority_weight — Priority weight of the vehicle usage accelerator — Acceleration/deceleration of the vehicle
`</attributes>`	
`<max_number_reloads>`	Optional parameter, maximum number of reloads at the depot Default value: 0 (unbounded)
`<distance_limits>`	Optional parameter
`<limit type="">`	Distance limits (in kilometers) Default value: none Enabled values of the "**type**" attribute: arc — Limit on any each arc used in result routes route — Limit on the entire route
`</distance_limits>`	
`<balance_groups>`	Optional parameter
`<group type="">`	Balancing criteria applied to vehicle routes with the same group definition. Integer group identifier linking different vehicles into one balance group. The differences of values of the balancing criterium are minimized within the group Enabled values of the "**type**" attribute: stops — Routes are balanced according to number of visited customers time — Routes are balanced according to total time distance — Routes are balanced according to total traveled distance
`</balance_groups>`	
`</vehicle>`	

3.3.1 ROUTE_SETTINGS

3.3.1.1 ROUTE_MODE

Description:

Route computation criteria.

Default value: fastest

Enabled values:

fastest	Fastest route is preferred
shortest	Shortest route is preferred

3.3.1.2 ROUTE_DIRECTIONS

Description:

Enforces restrictions for one-way roads.

Default value: true

true	
false	

3.3.1.3 ROUTE_BYPASS_TOLLRD

Description:

Enforces bypassing of toll roads.

Default value: false

true	
false	

3.3.1.4 ROUTE_ENHANCED_UTURNS

Description:

Enables enhanced U-turnability. If "true" the vehicle can revisit previously visited areas to reach routes that haven't been allowed before (due to turn prohibitions etc).

Default value: false

true	
false	

3.3.1.5 ROUTE_LEGISLATIVE_RESTRICTIONS

Description:

Enforces local legislative restrictions.

Default value: false

true	
false	

3.3.1.6 ROUTE_SUPPRESS_NOTHROUGTR

Description:

Suppresses non-rideability (through traffic). If "true" the vehicle can route through non-rideable areas.

Default value: false

true	
false	

3.3.1.7 ROUTE_SUPPRESS_LOCALROADS

Description:

Suppresses local roads. If "true" they are considered non-rideable when determining rideability.

Default value: false

true	
false	

3.3.1.8 ROUTE_ENFORCE_DATASPEEDS

Description:

Defines which speed values will be used when computing routes.

Default value: false

true	When computing routes the algorithm will use internal speeds stored in data layers of the individual countries.
false	When computing routes the algorithm will use speeds defined in the DT_VEHICLE (<speed_… >) structure. Unspecified categories will use preset values from the base vehicle profile.

3.3.2 FEATURES

3.3.2.1 HAZMAT

Beware: This field contains a bitmask value of all the hazardous materials in the cargo

0x0001	Explosives
0x0002	Gas
0x0004	Flammables
0x0008	Flammable solid/combustible
0x0010	Organic
0x0020	Poison
0x0040	Radioactive
0x0080	Corrosive
0x0100	Other
0x0200	Poisonous inhalation hazard
0x0400	Goods harmful to water
0x0800	Explosive and flammable

3.3.2.2 HAZMATPERMIT

Beware: This field contains a bitmask value of all the permits for hazardous materials in the cargo

0x0001	Explosives
0x0002	Gas
0x0004	Flammables
0x0008	Flammable solid/combustible
0x0010	Organic
0x0020	Poison
0x0040	Radioactive
0x0080	Corrosive
0x0100	Other
0x0200	Poisonous inhalation hazard

3.3.2.3 SPECIALCARGO

Beware: This field contains a bitmask value of all the special cargo types

0x0001	Refrigerated
0x0002	Car transport
0x0004	Quick degrading goods

3.3.3 ATTRIBUTES

3.3.3.1 PRIORITY

Description:

Vehicle priority in the solution. In the current version only boolean values are supported determining whether the vehicle should be included the available vehicles.

Default value: 1.0

1.0	The vehicle can be used in the solution
0.0	The vehicle can not be used in the solution

3.3.3.2 PRIORITY_WEIGHT

Description:

Priority weight of the vehicle usage. Vehicles with greater value of priority weight are preferred if the value of the attribute "PRIORITY" equals 1.0 as well.

Default value: 1.0

1.5	top priority
1.0	medium priority
0.5	low priority

3.3.3.3 ACCELERATOR

Description:

A coefficient which multiplies the speeds defined in DT_VEHICLE (<speed_… >).

Default value: 1.0

>1.0	fast vehicle
1.0	standard speed settings
<1.0	slow vehicle

Remark: Values in the interval [0.8;1.2] are recommended.

3.4 DT_NODE

<node>	
<id>	Mandatory parameter, unique place ID (in the solution scope)
<label>	Optional parameter, place label
<position>	Mandatory parameter, place coordinates in format: <position>PROJECTION_ID;LONGITUDE;LATTITUDE</position> E.g.: "<position>WGS-84; 14.433820; 50.073897</position>"
<sdblabel>	Optional parameter, sdb label
<country>	Optional parameter, country (not supported in the current version)
<zip>	Optional parameter, zip
<region>	Optional parameter, region (not supported in the current version)
<county>	Optional parameter, county
<city>	Optional parameter, city
<street>	Optional parameter, street
<house_number>	Optional parameter, house number
<attributes>	Mandatory parameter
<attribute name="">	Enabled values of the "**name**" attribute: type – Place type fixed_vehicle_id – Link to a specific vehicle fixed_order – Fixed place in the places order priority – Place usage priority priority_weight – Place service priority weight
</attributes>	
<time_windows>	Optional parameter, time windows for the place
<time_window>	Mandatory parameter, definition of the time window when this place can be served
<interval>	Mandatory parameter, time interval (only local time supported at the moment) ISO 8601 format: "YYYY-MM-DDTHH:MM/PTxHxM" E.g.: "2013-10-22T13:00:00/PT1H30M"
<service_time>	Optional parameter, time in minutes required to serve the place in this time window
</time_window>	
</time_windows>	
<demands>	Optional parameter, list of demands
<demand>	

`<capacity type="">`	Mandatory parameter, numerical value indicating demand for the given capacity type (if specified) Attribute "type" is optional and serves to link to the "type" attribute of vehicle capacity (has to be unique in the demands scope)
`</demand>`	
`</demands>`	
`<handling_times>`	Optional parameter, time required to manipulate a certain quantity, used together with the parameter demands
`<handling_time type="">`	Mandatory parameter, the handling time definition. Attribute "type" is optional and serves to link to the same attribute of demands (has to be unique in the handling_times scope)
`<time>`	Mandatory parameter, handling time (minutes)
`<units>`	Mandatory parameter, number of units linked to the handling time definition Example: <time>30</time> <units>100</units> Handling of 100 units takes 30 minutes.
`</handling_time>`	
`</handling_times>`	
`<rctags>`	Optional parameter, list of the place tags
`<inclusive>`	Optional parameter, semicolon delimited string defining required properties (E.g.: "crane;Freddy")
`<exclusive>`	Optional parameter, semicolon delimited string defining prohibited properties
`</rctags>`	
`<custom_note>`	Optional parameter, additional information describing the place
`</node>`	

3.4.1 ATTRIBUTES

3.4.1.1 TYPE

Beware: Mandatory field.

Description:

Sets the place type according to its function. In current version only distribution places (depots) and service places (customers) are supported.

Default value: service

depot	Distribution place
service	Service requiring place

3.4.1.2 FIXED_VEHICLE_ID

Description:

Only specified if this place is to be fixed to a given vehicle Id. The place will be served with the specified vehicle.

Remark: Actually, this attribute is valid only if all places of the type "service" have attributes "fixed_vehicle_id" and "fixed_order".

Default value: none

vehicle_id:vehicle_order	Two identifiers linking vehicle to a place. E.g. "0:0"

3.4.1.3 FIXED_ORDER

Description:

Place order in the given vehicle route linked through the <attribute name="fixed_vehicle_id"> field. If no valid result is found in `<result>` or the "fixed_vehicle_id" value isn't specified, this value is ignored.

Remark: Actually, this attribute is valid only if all places of the type "service" have attributes "fixed_vehicle_id" and "fixed_order".

Default value: none

integer	Place order in the list of all the fixed places

3.4.1.4 PRIORITY

Description:

Place priority in the solution. In the current version only boolean values are supported determining whether the place should be included the solution.

Default value: 1.0

1.0	Place has to be served
0.0	Place must not be served

3.4.1.5 PRIORITY_WEIGHT

Description:

Place service priority weight. In case the vehicle fleet size is not sufficient to service all places in the solution, places with larger priority weight are preferred. The value of the attribute "PRIORITY" must equal 1.0 as well.

Default value: 1.0

2.0	top priority
1.0	standard priority

3.5 DT _ROUTE_NODE

<node>	Always present, at least 2 instances
<node_id>	Always present, place Id
<arrival>	Always present, time of arrival to the place (in current version only local time is supported) ISO 8601 format: "YYYY-MM-DDTHH:MM"
<departure>	Always present, time of departure from the place (in current version only local time is supported) ISO 8601 format: "YYYY-MM-DDTHH:MM"
<latest_departure>	Always present, time of the latest tolerable departure from the place (in current version only local time is supported) ISO 8601 format: "YYYY-MM-DDTHH:MM"
<depot_distance>	Always present, cumulative distance from the depot (m)
<time_window_index>	Present if the time window contains the arrival time, index of the time window used
<service_time>	Present if there is a specific ammount of time needed to service this place (minutes)
<loads>	Present if a list of loads was specified for this place
<load type="">	Numerical value, ammount loaded "type" attribute is optional and links to the "type" attribute of vehicle capacity, has to be unique in the loads scope
</loads>	
<unloads>	Present if a list of unloads was specified for this place
<unload type="">	Numerical value, ammount unloaded "type" attribute is optional and links to the "type" attribute of vehicle capacity, has to be unique in the unloads scope
</unloads>	
<breaks>	Present if some computed breaks were specified
<break>	
<interval>	Always present, time interval of the break (in current version only local time is supported) ISO 8601 format: "YYYY-MM-DDTHH:MM/PTxHxM", E.g.: "2013-10-22T13:00:00/PT1H30M"
<during_service>	Present if a break is planned during this place's service, contains the place Id
</break>	
</breaks>	
<attributes>	Present if any extended place info was specified
<attribute name="">	Enabled values of the "**name**" attribute:

relaxed	General information about some condition's relaxation
relaxed_twfrom	Time window start is relaxed
relaxed_twto	Time window end is relaxed
relaxed_incltags	Place inclusive tags are relaxed
relaxed_excltags	Place exclusive tags are relaxed
relaxed_demand_dim1	First demand condition is relaxed
relaxed_demand_dim2	Second demand condition is relaxed
relaxed_demand_dim3	Third demand condition is relaxed

	relaxed_demand_dim4	Fourth demand condition is relaxed
	relaxed_demand_dim_other	Demand for an unspecified type is relaxed
	relaxed_access	Vehicle profile restrictions are relaxed
`</attributes>`		
`</node>`		

3.5.1 ATTRIBUTES

3.5.1.1 RELAXED

Description:

Information of a certain task condition's relaxation.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.2 RELAXED_TWFROM

Description:

Relaxation of the time window start condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.3 RELAXED_TWTO

Description:

Relaxation of the time window end condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.4 RELAXED_INCLTAGS

Description:

Relaxation of the inclusive tags condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.5 RELAXED_EXCLTAGS

Description:

Relaxation of the exclusive tags condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.6 RELAXED_DEMAND_DIM1

Description:

Relaxation of the first demand condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.7 RELAXED_DEMAND_DIM2

Description:

Relaxation of the second demand condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.8 RELAXED_DEMAND_DIM3

Description:

Relaxation of the third demand condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.9 RELAXED_DEMAND_DIM4

Description:

Relaxation of the fourth demand condition.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.10 RELAXED_DEMAND_DIM_OTHER

Description:

Relaxation of the demand condition for an unspecified type.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.5.1.11 RELAXED_ACCESS

Description:

Relaxation of vehicle profile restrictions.

Default value: false

true	Condition is relaxed
false	Condition is complied

3.6 DT_ROUTE

`<route id="">`	The attribute "id" is always present, route identifier in the result scope
`<vehicle_id>`	Always present, Id of the vehicle
`<vehicle_order>`	Always present, order of the vehicle
`<cost>`	Always present, cost of the vehicle's route
`<time>`	Always present, total route time (minutes)
`<length>`	Always present, total route length (m)
`<routeloads>`	Present of demands were specified, total route load
`<load type="">`	Ammount loaded (numerical value) "type" attribute is optional and links to the "type" attribute of vehicle capacity, must be unique in the loads scope
`</routeloads>`	
`<nodes>`	Always present
DT_ROUTE_NODE	DT_ROUTE_NODE structure
`</nodes>`	
`<route_attributes>`	Present if enhanced route information were specified
`<attribute name="">`	Enabled values of the "**name**" attribute:

	vehicle_flags	Additional vehicle characteristic used in the solution
`</route_attributes>`		
`</route>`		

3.6.1 ROUTE_ATTRIBUTES

3.6.1.1 VEHICLE_FLAGS

Description:

Additional vehicle characteristic used in the solution. In the current version it's only present if the given route is serviced by a virtual vehicle (meaning that not enough vehicles of the given type are available to create a solution).

Default value: 0

0	No additional vehicle characteristic
0x0001	Virtual vehicle

4 FORMAT OF RML VERSION 1.1

`<rml version="1.1">`	
`<params>`	Mandatory, parameters of the Road Control task
`<settings>`	Optional parameter, general settings
`DT_SETTINGS`	DT_SETTINGS
`</settings>`	
`<vehicles>`	Mandatory parameter, vehicle fleet specification
`DT_VEHICLE`	DT_VEHICLE structure
`</vehicles>`	
`<nodes>`	Mandatory parameter, places specification
`DT_NODE`	DT_NODE structure
`</nodes>`	
`</params>`	
`<result>`	
`<totalcost>`	Always present, total solution cost
`<totallength>`	Always present, total length of all the routes (m)
`<totalloads>`	Present if loads are specified, total ammount loaded
`<load type="">`	Numerical value, ammount loaded "type" attribute is optional and links to the "type" attribute of vehicle capacity, has to be unique in the loads scope
`</totalloads>`	
`<node_failures>`	Optional parameter, list of places that could not be served.
`<failure nodeid="">`	Reason of place service failure. The attribute "nodeid" is mandatory. It holds the place identifier. Enabled values: 0 no failure 1 distance matrix calculation failed to process the place due to vehicle profile restrictions 2 place was rejected from the solution during the optimization phase due to restrictive working time settings 3 place was rejected during the final route itinerary calculation due to vehicle profile restrictions 4 Place is served in virtual vehicle
`</node_failures>`	
`<routes>`	Always present, routes list
`DT_ROUTE`	DT_ROUTE structure
`</routes>`	
`</result>`	
`</rml>`	

5 EXAMPLES

5.1 EXAMPLE 1 – RML TASK SPECIFICATION FOR ROADCONTROL


```
<rml version="1.1">
    <params>
        <settings>
        </settings>
        <vehicles>
            <vehicle>
                <id>0</id>
                <label>Vehicle 1</label>
                <profile_label>Auto</profile_label>
                <route_settings>
                    <setting type="Route_enforce_dataspeeds">false</setting>
                </route_settings>
                <features>
                </features>
                <speed_highway>114</speed_highway>
                <speed_class1>76</speed_class1>
                <speed_class2>55</speed_class2>
                <speed_class3>41</speed_class3>
                <speed_village_road>25</speed_village_road>
                <shift_interval>PT12H</shift_interval>
                <max_work_time>270</max_work_time>
                <min_break_time>45</min_break_time>
                <service_time_as_break_time>denied</service_time_as_break_time>
                <costs_km>2.000000000</costs_km>
                <costs_ride>250.000000000</costs_ride>
                <idle_time_cost>
                    <cost>100.000000000</cost>
                    <interval>60</interval>
                    <type>0</type>
                </idle_time_cost>
                <capacities>
                    <capacity type="kg">800.000000</capacity>
                    <capacity type="m3">100.000000</capacity>
                    <capacity type="pcs">1000.000000</capacity>
                    <capacity type="l">12000.000000</capacity>
                </capacities>
                <start_node_id>0</start_node_id>
                <rctags>Vozidlo 1</rctags>
                <attributes>
                    <attribute name="priority">1.000000000</attribute>
                </attributes>
            </vehicle>
        </vehicles>
        <nodes>
            <node>
                <id>0</id>
                <label>Depot1</label>
                <sdblabel>CZ, Praha 7, Tusarova 1439/12</sdblabel>
                <position>Gauss Pas3;5552446.65;3460446.22</position>
```

```
        <attributes>
            <attribute name="type">depot</attribute>
            <attribute name="priority">1.000000000</attribute>
        </attributes>
        <time_windows>
            <time_window>
                <interval>T08:00/PT10H</interval>
                <service_time>0</service_time>
            </time_window>
        </time_windows>
        <demands>
        </demands>
    </node>
    <node>
        <id>1</id>
        <label>Customer1</label>
        <sdblabel>CZ, Nymburk, Purkyňova 1131/15</sdblabel>
        <position>Gauss Pas3;5561590.65;3502610.22</position>
        <attributes>
            <attribute name="type">service</attribute>
            <attribute name="priority">1.000000000</attribute>
        </attributes>
        <time_windows>
            <time_window>
                <interval>T08:00/PT3H</interval>
                <service_time>15</service_time>
            </time_window>
            <time_window>
                <interval>T14:30/PT1H45M</interval>
                <service_time>30</service_time>
            </time_window>
        </time_windows>
        <demands>
            <demand>
                <capacity type="kg">100.000000</capacity>
                <capacity type="m3">100.000000</capacity>
                <capacity type="pcs">100.000000</capacity>
                <capacity type="l">100.000000</capacity>
            </demand>
        </demands>
        <handling_times>
            <handling_time type="kg">
                <time>15</time>
                <units>1000</units>
            </handling_time>
            <handling_time type="m3">
                <time>5</time>
                <units>1</units>
            </handling_time>
        </handling_times>
        <rctags>
            <exclusive>Vehicle 2</exclusive>
        </rctags>
        <custom_note>My Note</custom_note>
```

```
            </node>
        </nodes>
    </params>
    <result>
        <totalcost>355.364200000</totalcost>
        <totallength>52682</totallength>
        <totalloads>
            <load type="kg">100.000000</load>
            <load type="m3">100.000000</load>
            <load type="pcs">100.000000</load>
            <load type="l">100.000000</load>
        </totalloads>
        <routes>
            <route>
                <vehicle_id>0</vehicle_id>
                <vehicle_order>1</vehicle_order>
                <cost>355.3642</cost>
                <time>43</time>
                <length>52682</length>
                <routeloads>
                    <load type="kg">100.000000</load>
                    <load type="m3">100.000000</load>
                    <load type="pcs">100.000000</load>
                    <load type="l">100.000000</load>
                </routeloads>
                <nodes>
                    <node>
                        <node_id>0</node_id>
                        <arrival>T08:00</arrival>
                        <departure>T08:00</departure>
                        <latest_departure>T15:31</latest_departure>
                        <depot_distance>0</depot_distance>
                        <time_window_index>0</time_window_index>
                        <loads>
                            <load type="kg">100.000000</load>
                            <load type="m3">100.000000</load>
                            <load type="pcs">100.000000</load>
                            <load type="l">100.000000</load>
                        </loads>
                    </node>
                    <node>
                        <node_id>1</node_id>
                        <arrival>T08:43</arrival>
                        <departure>T08:58</departure>
                        <latest_departure>T16:30</latest_departure>
                        <depot_distance>52682</depot_distance>
                        <service_time>15</service_time>
                        <time_window_index>0</time_window_index>
                        <loads>
                            <load type="kg">100.000000</load>
                            <load type="m3">100.000000</load>
                            <load type="pcs">100.000000</load>
                            <load type="l">100.000000</load>
                        </loads>
```



```
                    </node>
                </nodes>
            </route>
        </routes>
    </result>
</rml>
```

