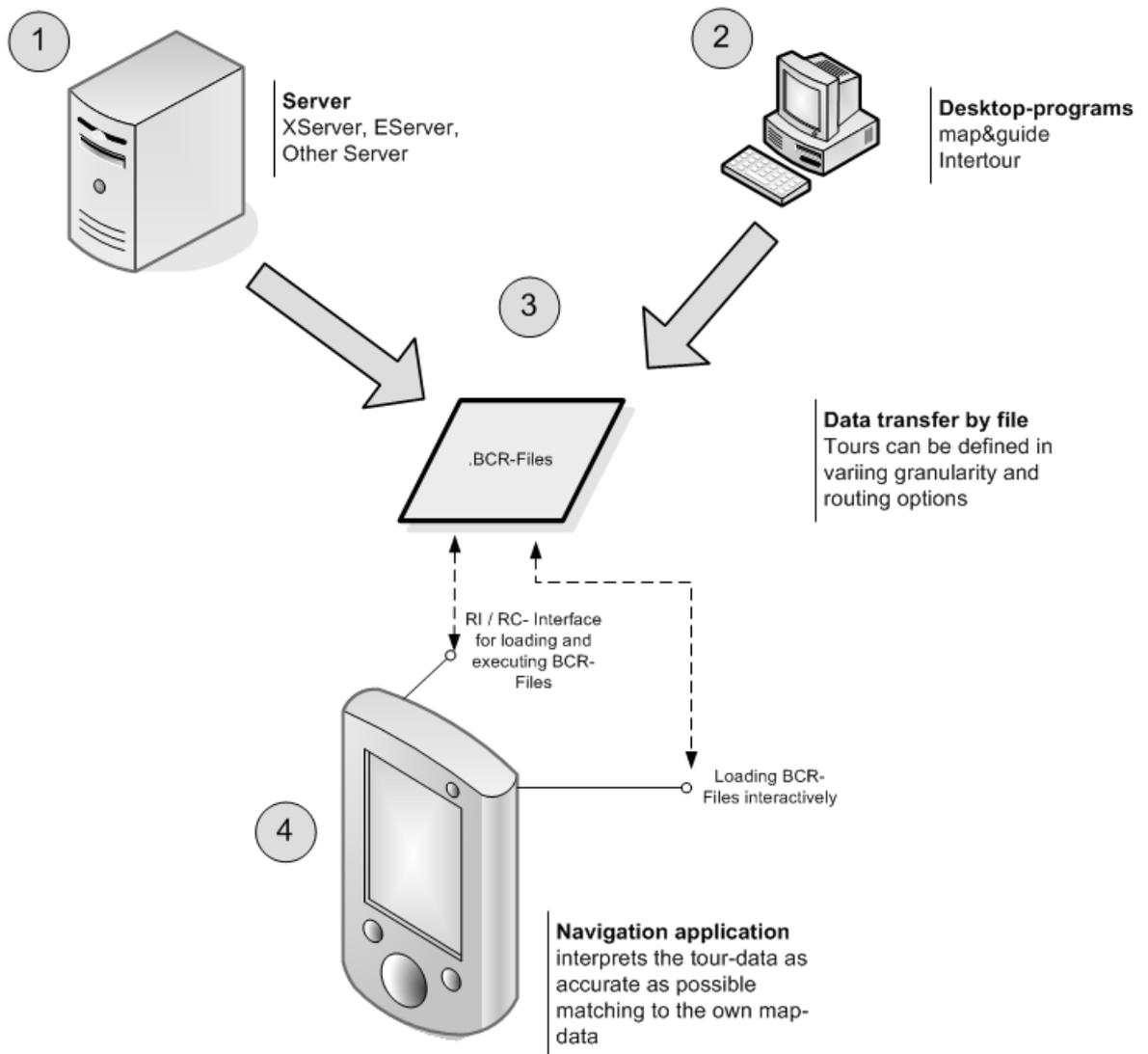


Guided Navigation

Transferring routes including traces to the Navigation

2 Introduction



In contrary to standard connected navigation systems, that can transfer destinations to the navigation, guided navigation makes it possible to transfer tours as exact as possible from a server based or desktop-based system to the PTV Navigator, transferring information about the trace the route should follow together with destinations.

For this propose the transferred tour contains intelligent via-points (MVP=magnetic via points), that are different from normal stop-off-points. Normal stop-off-points have to be visited. They can't be passed by and left out, without visiting them.

Magnetic-via-points only influence the tour, but do not set up stop-off-points, that have to be visited, so they may be left out on the tour. Tours including magnetic via points in navigation normally are wanted to be used in the way, that the system aims to lead back as quick as possible to the defined tour, if a driver gets off the

route. The driver does not see any difference in UI, if MVPs are used; just the route follows a trace that is similar to the defined one.

Best results will be received using as similar as possible maps and routing-parameters on server and navigator side, but same maps are not mandatory. The magnetic via points concept is designed to cope with map differences as good as possible.

1.1 Offroad Guided Navigation

Up from PTV Navigator 6.5 there is the possibility to use Guided Navigation also in offroad situations. That means, it is possible to define routes that are completely or partly offroad, meaning not connected to the underlying street network. Because the route then is not connected to the street networks, the PTV Navigator restricts himself on showing the route trace, and switching to a moving map application in the offroad part.

Parts for MVP-routing and offroad-parts can be mixed. Guided Navigation offroad can also be used to map difficult situations like loops or U-Turns in dead end situations or if routes should be followed, that break legal restrictions in the map materials like closings.

3 Interface for Guided Navigation

Guided Navigation builds on externally predefined routes.

map&guide products are using a standard-format for storing routes called BCR-Format. BCR-Format is an easy readable text-file format and e.g. used in map&guide products.

In PTV Navigator BCR files can be loaded manually via the user interface (<Navigation> – <Navi lists>) or by loading the file automated via RI-Interface.

For the use in PTV Navigator this standard (ini-file) format is extended by additional entries:

Section [Station2Segmentcenters]

In this section can be placed magnetic via points, that attract the flow of the route trace. Choose „Station2Segmentcenters“ as section name for the MVPs leading to the target station, „Station3Segmentcenters“ if you have more than start/target for leading to additional targets.

Parameter	Description	Syntax / Example
Point[n]	Magnetic via points (MVP) in Mercator format. Direction is given in 360° starting from north <Optional> With “1” a point can be defined as offroad point <Optional>	Point[n] = <Xcoord>,<Ycoord>,<direction>,<usage> Point1=933754,6269173,163 Point2=933547,6269334,,1

Section [Client]

Parameter	Description	Syntax / Example
Vehicleprofile	A Vehicleprofile can be specified to be preferably used on target platform else the actual profile will be used by PTV Navigator. <Optional>	Vehicleprofile=<profilename> Vehicleprofile=LKW400.dat
UsedMap	Can be used to speed up route calculation if the whole route is in one map <Optional>	UsedMap=<Mapname> UsedMap=Fra_10Q2

3.1 BCR-Standard Format

The BCR-File format used by map&guide contains a lot of optional usable attributes that are not described in detail here.

Some entries are mandatory for the use in PTV Navigator, these are described here:

Section [Client]

Parameter	Description	Syntax / Example
Station[n]	The stations of a stationlist, describing what type of entry it is, (town/POI) and the link mode (use always 999999999 here for dynamic binding)	Station[n]=<type>,<link_mode> Station1=Town, 999999999

Section [Coordinates]

Parameter	Description	Syntax / Example
Station[n]	The coordinates of stations in Mercator format.	Station[n]=<Xcoord>,<Ycoord> Station1=937172,6270162

Section [Description]

Parameter	Description	Syntax / Example
Station[n]	A description containing formatted string to display information about the station.	Station[n]=<zip>,<town>,<street> Station1= D 76131,Karlsruhe,Stumpfstraße 1

Section [Visited]

Parameter	Description	Syntax / Example
Station[n]	Defines if a station has been visited or not. Normally Station1 should be set on 1 as being visited if used with guided navigation, else the starting station has to be visited before the guided navigation begins	Station[n]=1/0 Station1= 1

3.2 Examples of a BCR-Files with Magnetic Via Points

Additions for Navigator are in **blue**, not all entries in BCR-Files are necessary for the PTV Navigator

Exampleroute.bcr

```
[CLIENT]
STATION1=TOWN,999999999
STATION2=TOWN,999999999
VEHICLE=LKW langsam
VehicleProfile=Pkw.dat
UsedMap=DAC_08Q2
ROUTENAME=From Stumpfstr, Karlsruhe to Striederstr, Karlsruhe

[COORDINATES]
STATION1=937172,6270162
STATION2=937798,6269594

[DESCRIPTION]
STATION1=D 76131,Karlsruhe,Stumpfstraße 1
STATION2=D 76131,Karlsruhe,Striederstraße

[VISITED]
STATION1=1
STATION2=0

[Station2Segmentcenters]
Point1=936961,6270547,90
Point2=936970,6270451,174.2894
Point3=936954,6270352,264.8056
Point4=936930,6270331,172.875
Point5=936942,6270304,126.8699
Point6=936968,6270297,90
Point7=937052,6270304,83.8845
Point8=937129,6270271,166.7595
Point9=937170,6270165,154.29
Point10=937213,6270105,68.19859
Point11=937245,6270114,75.96375
Point12=937326,6270145,67.0679
Point13=937413,6270182,68.19859
Point14=937461,6270129,158.9625
Point15=937495,6270028,165.9638
Point16=937514,6269953,165.0686
Point17=937538,6269838,169.6952
Point18=937552,6269751,180
Point19=937562,6269665,173.0888
Point20=937581,6269588,75.96375
Point21=937656,6269592,87.87891
Point22=937757,6269595,90
```

In the section "Station2SegmentCenters" you will find magnetic via points for the route between station 1 and 2. Each line contains the coordinates in Mercator-Format and the angle at this point in driving direction (0-360°, 0=north, 90=east). "Vehicleprofile" describes the filename of the vehicle profile that should be used on navigator-side. "UsedMap" is an optional parameter if the whole route is situated in one map to speed up Route calculation.

3.3 Restrictions for MVP Routes

As Magnetic Via Points help the routing algorithms by preferring road, they can not guide on route with loops, for the algorithm will take the abbreviation in the loop if possible and not follow the original route. You can fix it with inserting stations in the loop.

3.4 Examples of a BCR-Files with offroad routing mixed with Magnetic Via Points

Offroad Guided navigation gives the possibility to define points that don't have to be in relation with the underlying street network. Changes to comparison to the MVP-Model are in marked in blue.

Exampleroute.bcr

```
[CLIENT]
STATION1=TOWN,999999999
STATION2=TOWN,999999999
VEHICLE=LKW langsam
VehicleProfile=Pkw.dat
UsedMap=DAC_08Q2
ROUTENAME=From Stumpfstr, Karlsruhe to Striederstr, Karlsruhe

[COORDINATES]
STATION1=937172,6270162
STATION2=937798,6269594

[DESCRIPTION]
STATION1=D 76131,Karlsruhe,Stumpfstraße 1
STATION2=D 76131,Karlsruhe,Striederstraße

[VISITED]
STATION1=1
STATION2=0

[Station2Segmentcenters]
Point1=936961,6270547,90
Point2=936970,6270451,174.2894
Point3=936954,6270352,264.8056
Point4=936930,6270331,172.875
Point5=936942,6270304,126.8699
Point6=936968,6270297,90
Point7=937052,6270304,83.8845
Point8=937129,6270271,166.7595, 1
Point9=937170,6270165,154.29, 1
Point10=937213,6270105,68.19859, 1
Point11=937245,6270114,75.96375, 1
Point12=937326,6270145,67.0679, 1
Point13=937413,6270182,68.19859, 1
Point14=937461,6270129,158.9625
Point15=937495,6270028,165.9638
Point16=937514,6269953,165.0686
Point17=937538,6269838,169.6952
Point18=937552,6269751,180
Point19=937562,6269665,173.0888
Point20=937581,6269588,75.96375
Point21=937656,6269592,87.87891
Point22=937757,6269595,90
```



In the section "Station2SegmentCenters" you will find magnetic via points for the route between station 1 and 2. Each line contains the coordinates in Mercator-Format and the angle at this point in driving direction (0-360°, 0=north, 90=east). "Vehicleprofile" describes the filename of the vehicle profile that should be used on navigator-side. "UsedMap" is an optional parameter if the whole route is situated in one map to speed up Route calculation.