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# iDIS-FMS-MVT

## Multi Vehicle Tracking with several INS/GPS systems

It is in the focus of vehicle designers and developers of driver assistance systems to know the trajectory and dynamic behaviour of one or of several vehicles very accurately. The required task is called "vehicle tracking" or "multi vehicle tracking" (MVT).

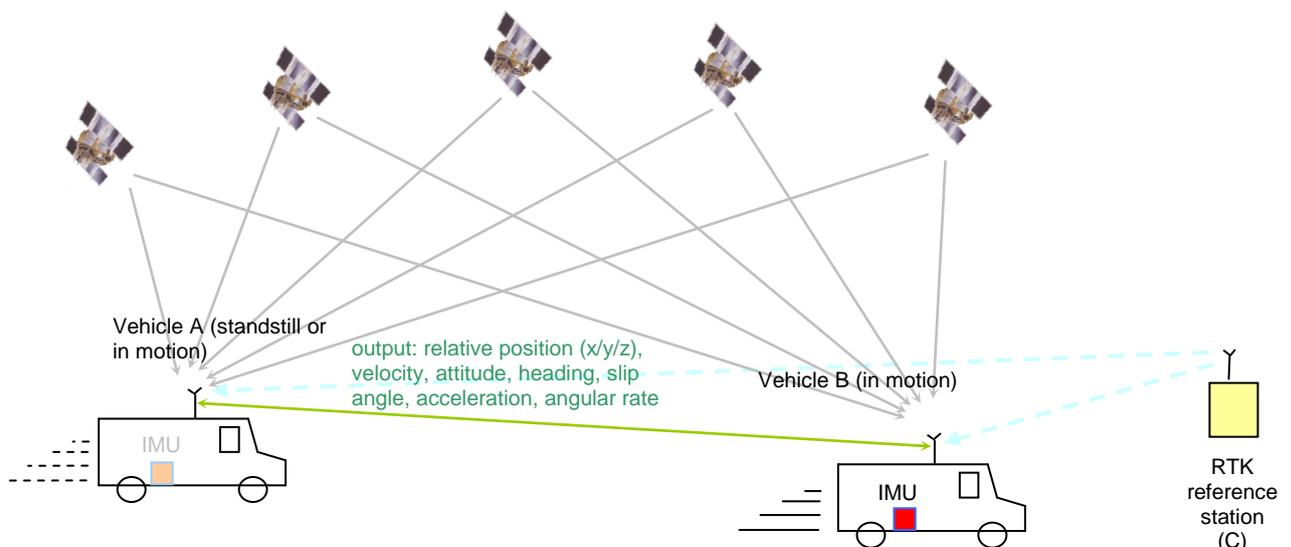
- MVT accuracy 0.1° / 1 mg / 0.001 °/s (under dynamic motion)
- 2 cm position accuracy (trajectory accuracy without GPS outages) and 0.2 % of distance travelled (during GPS outages)
- interfaces: CAN / RS232 / Ethernet
- MVT standard configuration usable for 1 vehicle and one DGPS reference station or for 2 moving vehicles (moving baseline).
- Using iMAR's wellknown iDIS-FMS

Due to its exceptional time synchronisation hardware, iMAR has prepared its inertial measurement systems of the family iDIS-FMS to be used for such MVT application. For this the iDIS-FMS is supported by a powerful DGPS receiver, a speed sensor (wheel or optical; if no GPS outages occur, no speed sensor is required), a wireless data transmission, a post-processing software and on request a real-time processing software.

The following picture shows the two configura-

GPS antenna as well as an inertial platform iDIS-FMS. The reference station C (iREF-L1L2 or ASCOS/SAPOS modem) provides correction data to both vehicles. In this configuration the differential relation (distance, orientation etc.) between both moving vehicles as well as the absolute position can be measured. For online result output a wireless transmission between A, B and C is required. The software iMVT-Fusion supports the MVT-online as well as MVT-offline Mode.

- Vehicle A is used as a local RTK-GPS reference station. The L1/L2 antenna is mounted on the roof of the vehicle (or on top of a building), the data are stored on a notebook inside the vehicle A, which is at standstill during the measurement. The moved vehicle B (vehicle B is the device under test) also carries an L1/L2 antenna on its roof and contains an iDIS-FMS inertial platform. For online result output a wireless transmission between both vehicles is required additionally.
- If only the relative position between both vehicles is required without any



tions in which the system can be used:

- Both vehicle A and vehicle B are under motion and both are carrying an L1/L2

need of attitude and heading, the GPS receivers inside the iDIS-FMS-MVT can be operated in a so-called "Moving Baseline" mode to provide relative cen-

timer accuracy if no GPS outages happen.

With the feature of the "Virtual Measuring Point" on the iDIS-FMS the position of every point of

the vehicle can be calculated as far as it can be assumed that the vehicle is a rigid body (see iDIS-FMS manual).



#### Technical Data of iDIS-FMS for MVT (Multi Vehicle Tracking) Applications:

Inertial System:	see data sheet of iDIS-FMS / iNAV-FMS
DGPS position accuracy:	1 m + 2 ppm of distance between rover and base station (no outages, in realtime) 2 cm + 2 pmm in post-processing 0.2 % of distance travelled (during short DGPS outages)
Data output rate:	200 Hz (adjustable; in postprocessing 400 Hz)
Output (options):	RS232, CAN, Ethernet / TCP/IP, 8 GByte flash disk for data storing
Inputs (options):	odometer (A/B), event trigger
DGPS system:	included (L1/L2 receiver, antennas, cables)
Wireless transmission:	required for online processing (option)
Sync. Reference:	UTC time
Power:	11...34 V DC, 35 W (without wireless transmission)
Temperature:	-25...+63 °C (operating within specification)
Shock:	60 g, 11 ms (depends on shock mounts)
Weight:	8.5 kg
Size:	265 x 145 x 150 mm (iDIS-FMS incl. L1L2-GPS receiver) Ø 85 x 30 mm (GPS antenna) 140 x 70 x 40 mm (wireless modem, depends on selection)
Software packages:	- iMVT-Fusion (offline Solution and online solution) - iWP+ (INS/RTK-GPS postprocessing) - iNavCommand (system configuration and data storage)

For higher performance systems see also our iTraceRT-F400-MVT.

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