iMAR
NAVIGATION & CONTROL

PRODUCTS AND SYSTEM SOLUTIONS

Overview Applications

- Navigation & Surveying
- Stabilization & Control
- Automotive
- Defence
- GNSS Denied
- Gravimetry
- Drilling
- Your needs?

iMAR
NAVIGATION & CONTROL

DEVELOPING SOLUTIONS FOR THE TASKS OF TODAY AND TOMORROW

Navigation & Surveying

Whatever is your challenge - you name it and we´ll master it

iMAR
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NAVIGATION

Seaborne Systems for Surveying, Navigation, Guidance & Control

Reliable navigation and surveying equipment for surface vessels and AUVs, also with customer-specific interfaces

iATTHEMO-M

Advanced INS/GNSS systems to provide **ATT**itude, **HE**ading, **MO**tion and heave for vessel navigation and ride control, incl. motion stabilization via fins/ flaps/ T-foils/thrusters, rudders

iATTHEMO-R

Increased Passenger and Crew Comfort e. g. on High Speed Ferries, Offshore Vessels etc. by iMAR's advanced Roll-Pitch-Stabilization

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NAVIGATION

Systems for Airborne Applications

Flight Motion Verification

Excellent roll, pitch & heading

Most accurate time stamping

Sub-decimeter accuracy

iNAT-M300

Miniaturized INS/GNSS solution with high-g and high-rate capability; low SWAP

iNAT-RQT
iNAT-FSLG

Independent high performance Flight Motion Measurements

iMAR is certified according to EASA Part 21G, ISO 9001 and EN 9100

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NAVIGATION

Example: Harbor Automation

MEMS based INS/GNSS/ODO platform, designed for harsh environment

multiple interfaces, high data rate, long life

modular platform with long-time availability

iVRU-CB-M
iNAT-CB-M

Straddle Carrier Vehicle Control

Customized Solutions for In-port Logistics

Systems for Factory Automation

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RAILWAY

Reliable Rail & Infrastructure Surveying

iNAT-M300
iNAT-RQT-400x

- INS/GNSS/ODO based system for reliable rail and infrastructure surveying
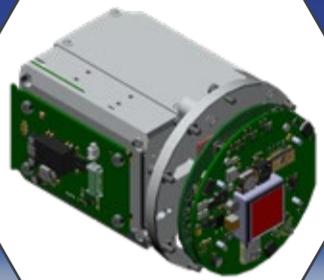- ETCS balises surveying capability
- qualified for railway environment

PIPELINE SURVEYING

Localization Tools for any Diameter

iIPST-FMS-E (FOG)

IMU with pressure resistant enclosureas; diameter > 6"

Post-Proc software iPosCAL-PST supports dedicated processing

Position accuracy: typically 1 m per 2 km distance travelled

iIPST-FMS-6 (FOG)

core IMU system with 3 accelerometers, 3 fiber optical gyros, interfaces and power conditioning; diameter > 6"

HARDWARE SETUP:

• various I/Os

• support of 3 wheel sensors

• pressure resistant enclosure

• power consumption <15W

• weight approx. 4 kg

iPosCAL-PST

Post-Processing for Pipeline Surveying

• aiding by GNSS and magnetic markers

• map matching capability

• iMAR's leading MultiPass algorithms included

• CSV/KML data export

• optimized for iMAR's iPST system family

iPosCAL-PST

• easy to use for surveyors

• unmatched accuracy, ultra fast

• 30 years of experience in IMU/ODO/Marker signal processing and hardware design

-2155

-5200

-628

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iPosCAL-SURV

IMU+GNSS+X Post-Processing Software

The reference for INS/GNSS based surveying and analysis in automotive, aviation, railway, marine, geodesy, ...

iPosCAL-SURV

Highest Precision
Powerful Batch-Processing
Automatable + Integrable
optional Cloud Processing
ultra fast (5 sec per
1 hr mission)

PPP and DGNSS processing included; also support of GNSS denied mission processing, multi-base and multi-rover, multi-odometry, iMAR's leading navigation and "MultiPass*MultiPath" algorithms included
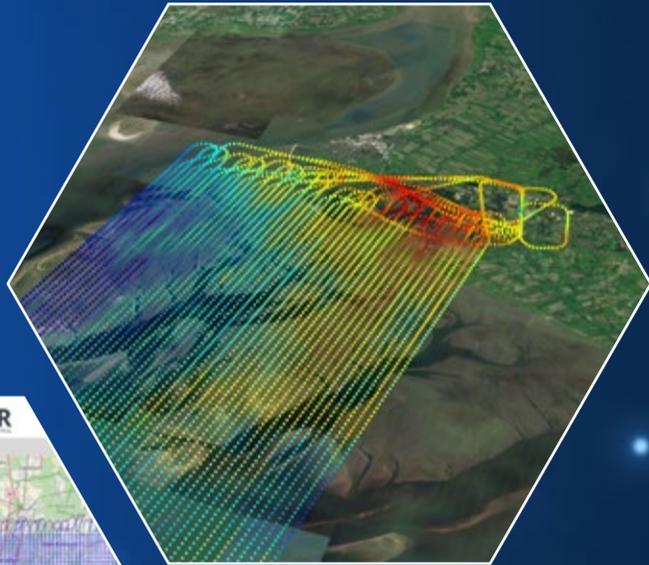
Challenging Surveying Application: Urban Canyon with Tunnel (3 drives)

red:
real-time dual-antenna MEMS solution of competitor

green:
same data, processed with iPosCAL-SURV

iPosCAL-GRAV

Gravity Gradiometry Post-Processing

Run Campaign

iMAR's leading INS/ GNSS post-processing with "MultiPass*MultiPath" algorithm, optimized for iMAR's iCORUS gravimetry system family
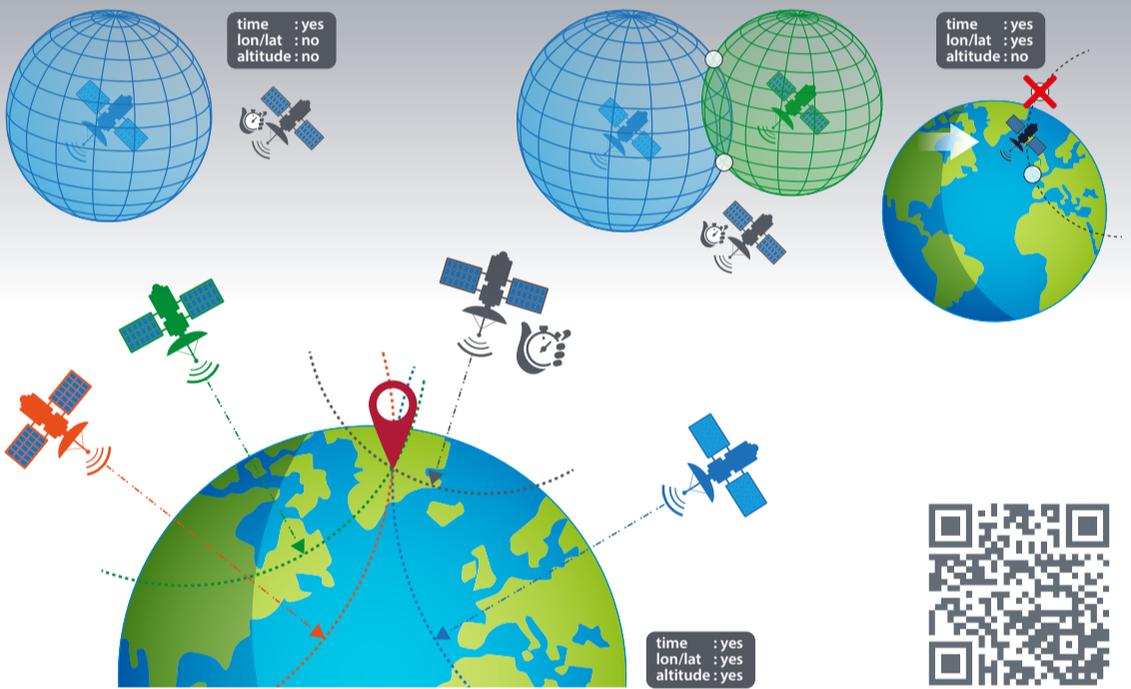
iPosCAL-GRAV

• easy to use
• ultra fast batch processing
• high rate data output for gravity gradiometry data, position, attitude & heading, velocity, status
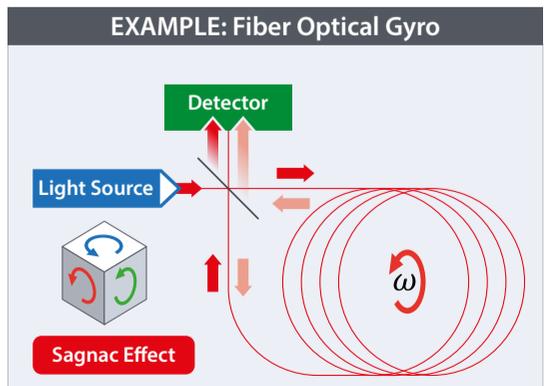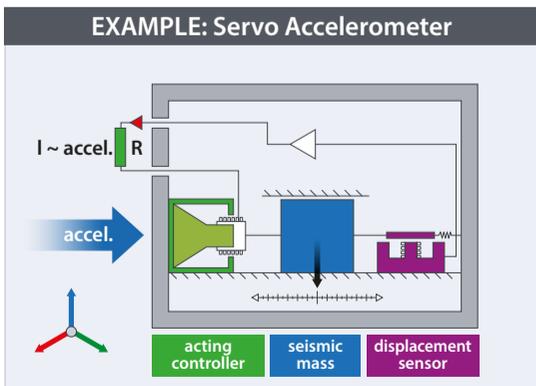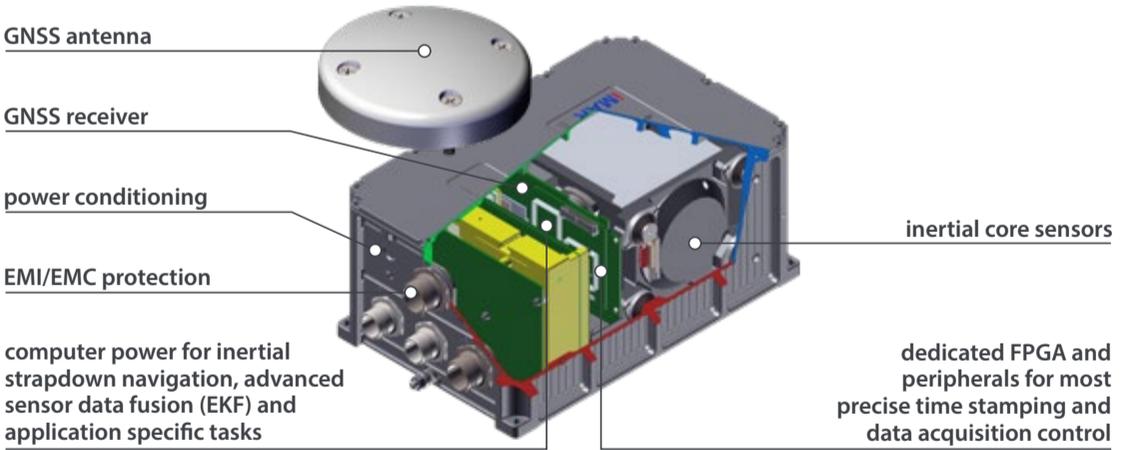
NAVIGATION

Inertial & GNSS Basics

GLONASS

GALILEO

GPS

GNSS-Position requires at least 4 Satellites for Longitude, Latitude, Altitude and Time

time   : yes
lon/lat   : no
altitude : no

time   : yes
lon/lat   : yes
altitude : no

time   : yes
lon/lat   : yes
altitude : yes

Inertial Navigation System

GNSS antenna

GNSS receiver

power conditioning

EMI/EMC protection

computer power for inertial
strapdown navigation, advanced
sensor data fusion (EKF) and
application specific tasks

inertial core sensors

dedicated FPGA and
peripherals for most
precise time stamping and
data acquisition control

EXAMPLE: Servo Accelerometer

I ~ accel. | R

accel.

acting
controller

seismic
mass

displacement
sensor

EXAMPLE: Fiber Optical Gyro

Detector

Light Source

Sagnac Effect

ω

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Lat 49.2738804° N • Long 7.1596637° E • Alt 311.34 m

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