

PRODUCTS AND SYSTEM SOLUTIONS

Overview Applications

**Navigation
& Surveying**

**Stabilization
& Control**

Automotive

Defence

GNSS Denied

Gravimetry

Drilling

Your needs?



**DEVELOPING SOLUTIONS FOR THE
TASKS OF TODAY AND TOMORROW**

Navigation

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



NAVIGATION

Seaborne Systems for Surveying, Navigation, Guidance & Control



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



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

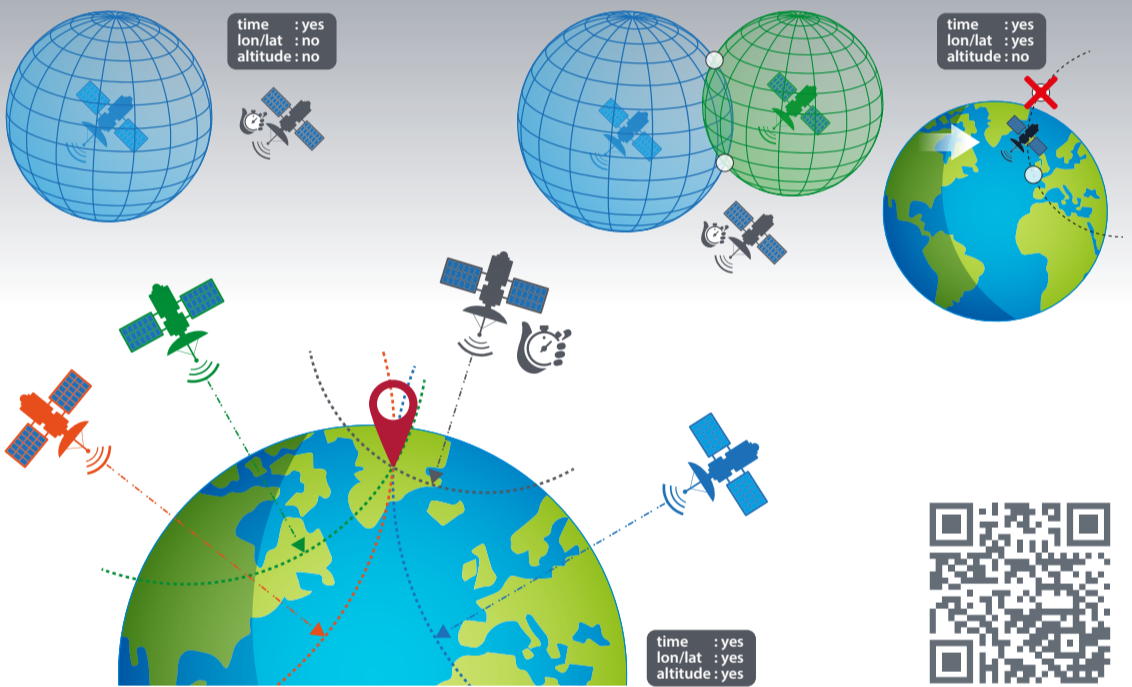


NAVIGATION

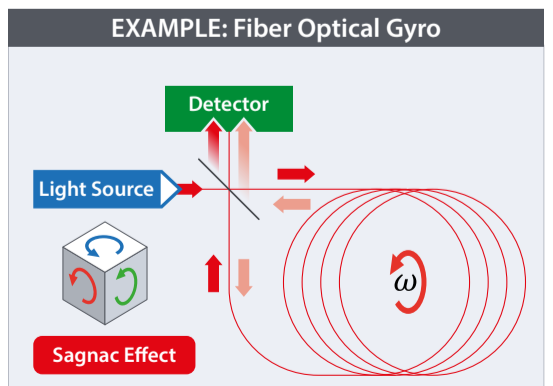
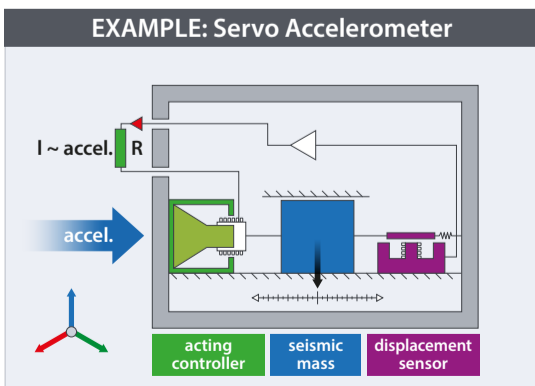
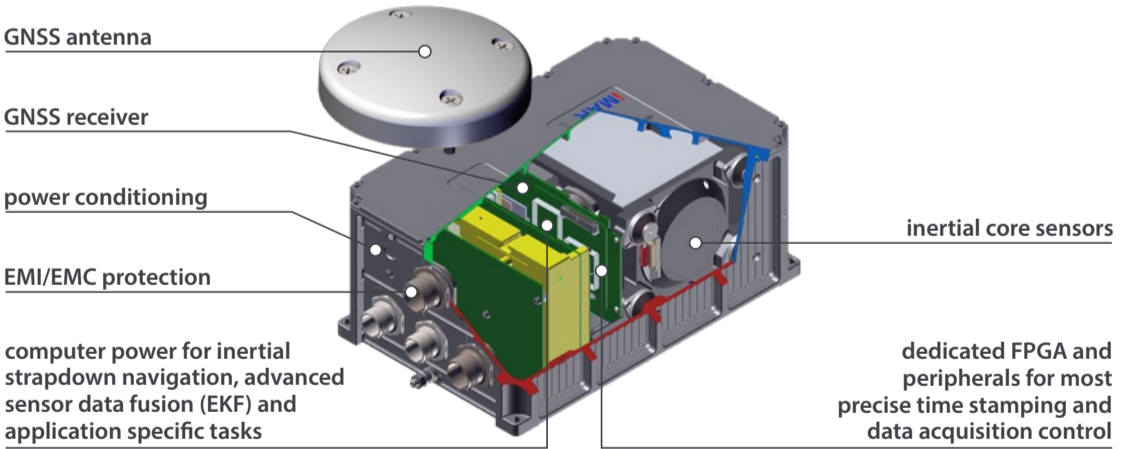
Inertial & GNSS Basics



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



Inertial Navigation System



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



**DEVELOPING SOLUTIONS FOR THE
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Gravimetry



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Stabilization & Control

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STABILIZATION & CONTROL

Gyro based Ride Control for manned and autonomous Ships

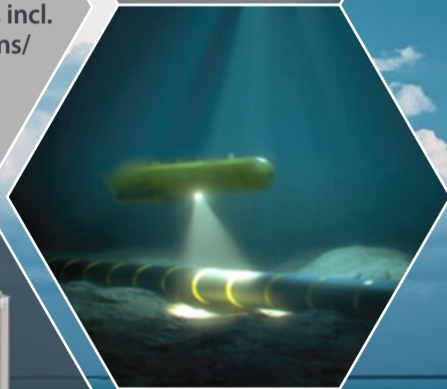


Reliable navigation and surveying equipment for surface vessels and AUVs, also with customer-specific interfaces

iATTHEMO-M

Advanced INS/GNSS systems to provide ATTitude, HEding, MOTion 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



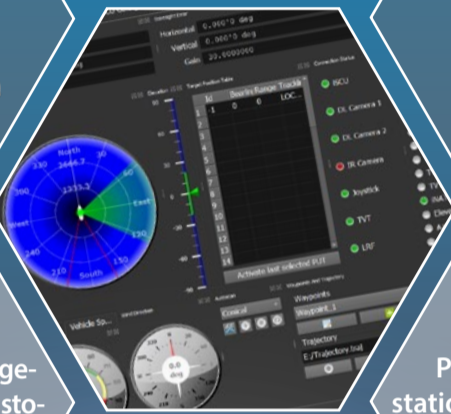
STABILIZATION & CONTROL

Detection – Surveillance – Tracking



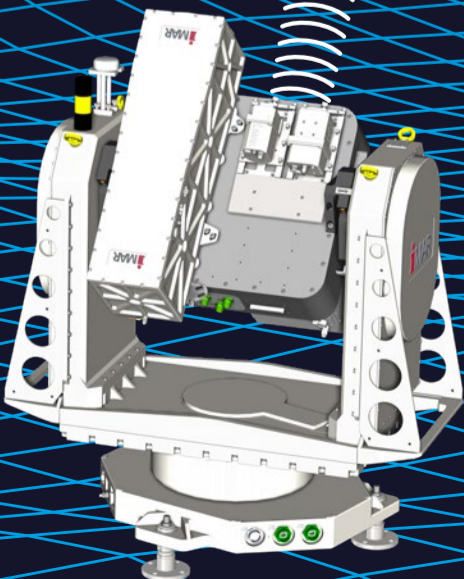
iIPSC-MSG-xx

Gyro stabilized electro optical tracking systems as general-purpose platforms or customized solutions. Observation and surveying platforms with different and also customized features



iIPSC-PT-xx

Gyro stabilized Pan-Tilt Platforms for mobile and stationary applications featuring TV, IR, high-speed camera, laser range finder, optical target tracker, antennas



STABILIZATION & CONTROL

Customized Solutions



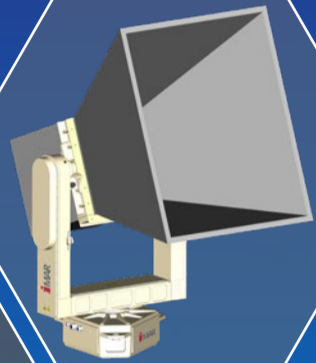
iIPSC-PT-xx

Gyro stabilized Pan-Tilt Platforms for mobile and stationary applications, for standard and customer defined payloads



iIPSC-ANTRAD

Multi axes stabilizers with high angular resolution and high dynamics, for land, sea and air applications



iIPSC-TAP

Two-Axes Platforms for mobile and stationary land and sea applications, for several payloads and in different configurations



**DEVELOPING SOLUTIONS FOR THE
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Stabilization & Control



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Global Navigation Satellite System





iLIANE

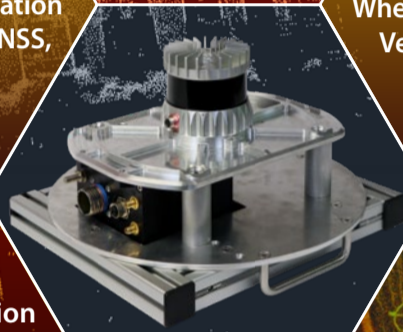
LiDAR aided Navigation Equipment

iLIANE-LI

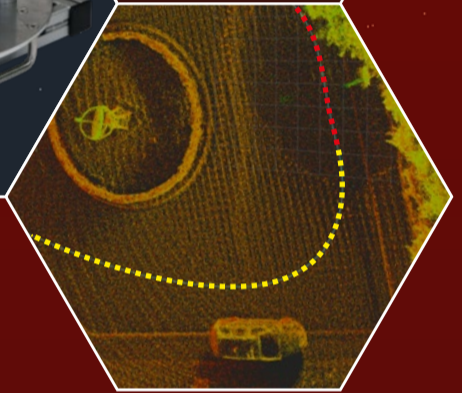
Accuracy of about 0.1 % of distance travelled, independent on mission duration (without any aiding, no GNSS, no odometer used)

iLIANE-LIGO

Seamless Integration of Imaging LiDAR / IMU / GNSS / Wheel Odometer. Most accurate Vehicle Localization even in fully GNSS and Radio denied Environment



Autonomous Localization & Navigation
Map Acquisition & Updating
Precise Infrastructure Surveying, bridging of long and systemic GNSS outages





RAILWAY

Reliable Localization and Vehicle Monitoring

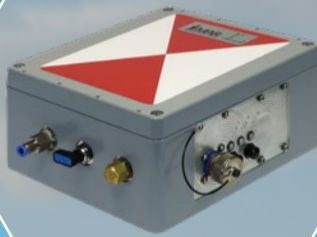
iRailLoc-C

- INS/GNSS/ODO based system for reliable train localization
- Extendable through LiDAR-aiding and map integration
- Easy integration on all locomotives
- Qualified for railway environment



iZET

- Ensures train integrity by localization and "lost detection" of last waggon
- Localisation system powered by pressure of brake system
- Monitors pressure of brake system



iRAD

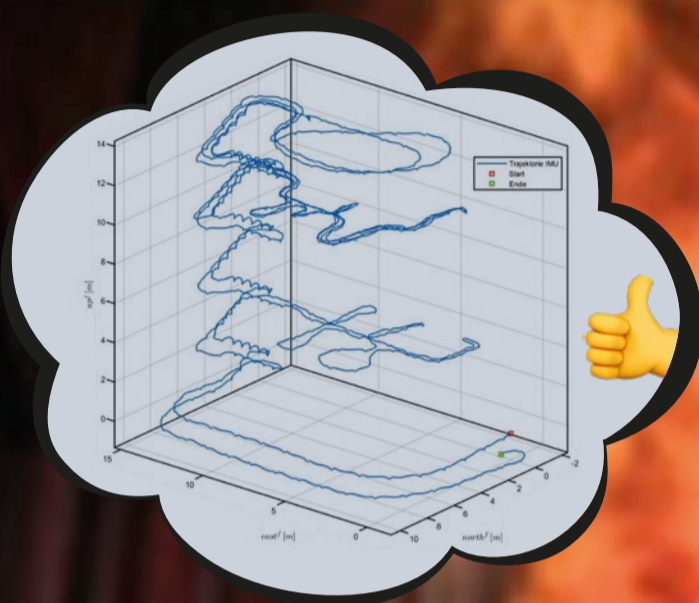
- Waggon localization system, powered by wheel generator
- Included wheel monitoring for predictive maintainance, especially flat pots
- Technology: miniaturized INS/GNSS with integrated wheel odometer and GNSS antenna mounted on Y25 bogie (and similar)





iTHESEUS

Infrastructure-independent Pedestrian Navigator



iTHESEUS
Localization Assistance System for Special Forces.
Accuracy about 1% of total distance travelled, independent on mission duration and on any Infrastructure (neither GNSS nor WiFi nor beacons required)



**DEVELOPING SOLUTIONS FOR THE
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Global Navigation Satellite System



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AUTOMOTIVE

Test Instrumentation

iTraceRT-MVT

Road Vehicle Motion Analysis & Control



iTraceRT-MVT-5xx

High Performance
FOG based INS/GNSS Systems
for Vehicle Motion Analysis
& Control

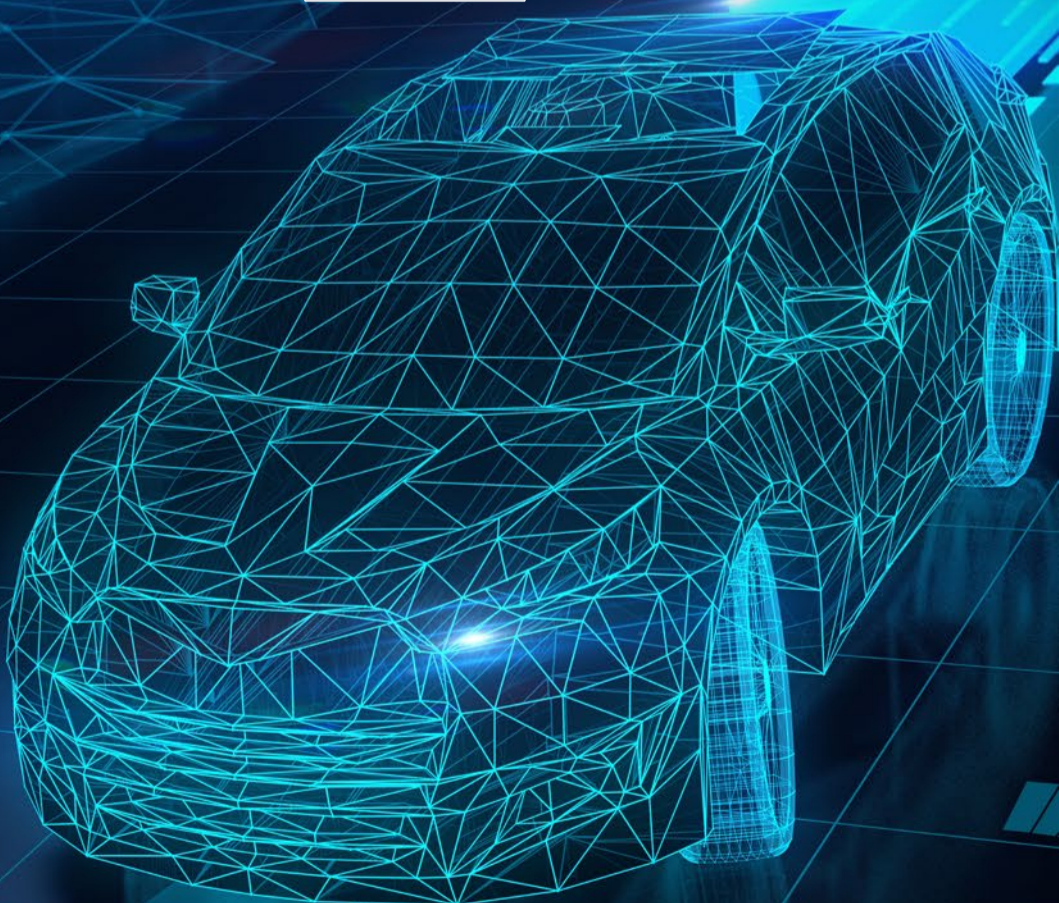


iTraceRT-MVT-6xx

Ultra performance
RLG based INS/GNSS Systems
for Surveying and Vehicle
Motion Analysis & Control

iTraceRT-MVT-200

Economic Performance
MEMS based INS/GNSS Systems
for Vehicle Motion Analysis
& Control



AUTOMOTIVE

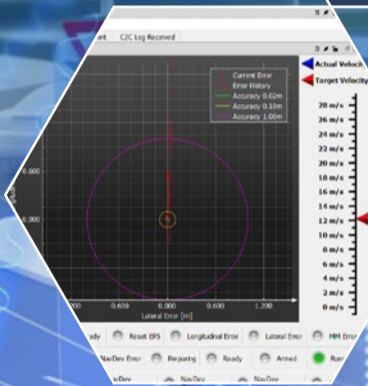
Scenario Based Testing & NCAP Testing

iARGUS-CMD

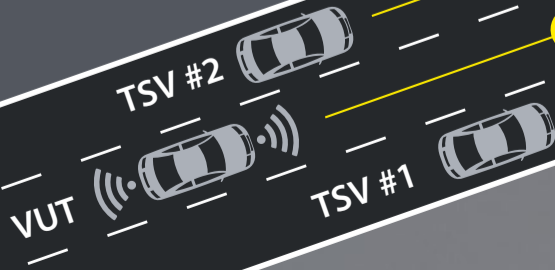
The leading Tool for Manufacturer independent Swarm Control for automated Vehicle Testing and Homologation within increasingly complex Traffic Scenarios

iSWACO-ARGUS

Holistic Toolchain ranging from Simulation to Real-World Testing of highly automated Vehicles and ADAS functionality on a Proving Ground supporting ISO 22133, AFGBV, EU 2022/2144 and iSCAML



Lane Change Scenario



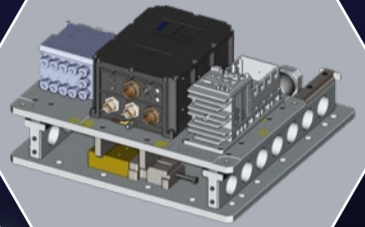
AUTOMOTIVE

Indoor-Navigation

iCRASH-CTRL

High-precision indoor navigation and vehicle control system, consisting of FOG based IMS and laser tracker for Crash Test Applications within centimeter accuracy

iCRASH-CMD



Crash Impact Absorber Sled to reduce forces on sensitive IMU and on electronics components



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Automotive



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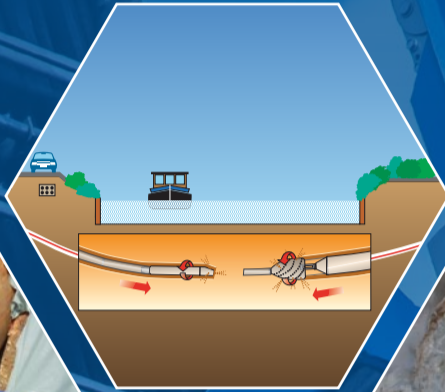
Drilling

Your needs?

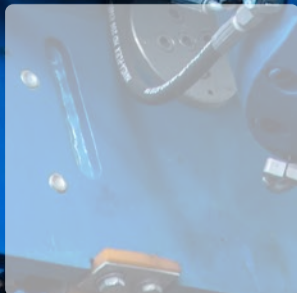


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Drilling

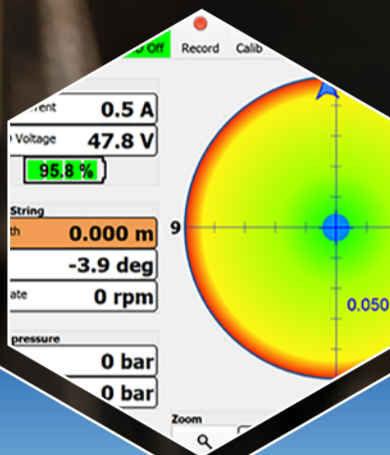


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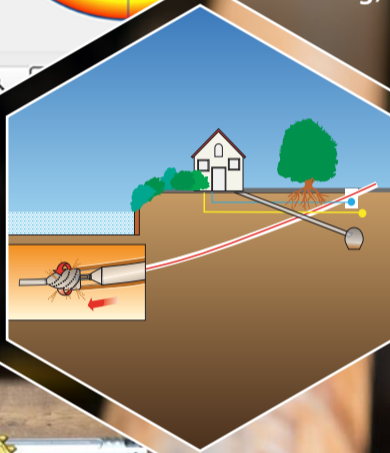
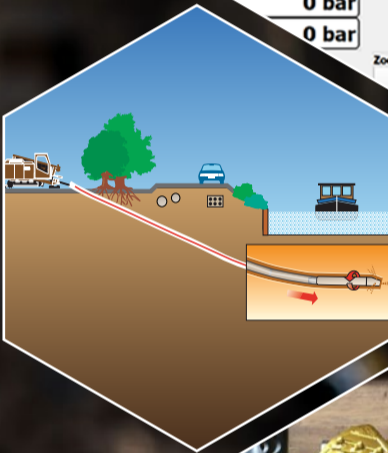
DRILLING

Gyro Guided Horizontal Directional Drilling



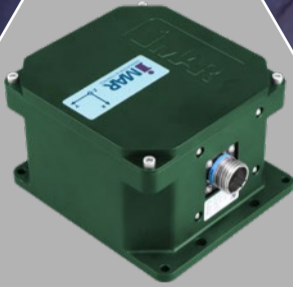
iANARO-HDD

Determination of the drill-head's orientation and position in real-time for MWD (Measuring While Drilling) operations



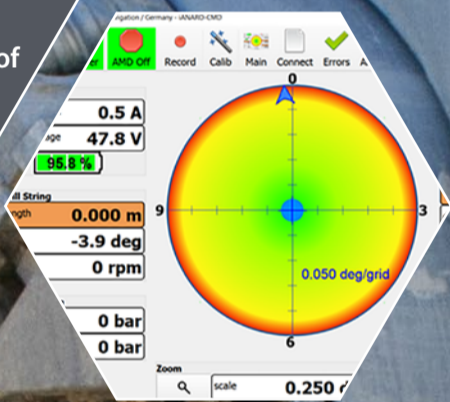
DRILLING

Gyro Guided Micro Tunneling



iANARO-MT

Precise three dimensional attitude / heading information in real-time, relative between two orientations or related absolute to true north and the horizon.
Application: Alignment of tunneling and mining machines.



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Drilling



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STRAPDOWN GRAVIMETRY

Airborne / Shipborne



iCORUS-02-RLG
iCORUS-04-FOG

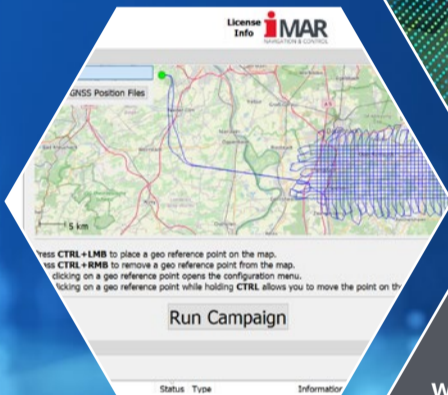
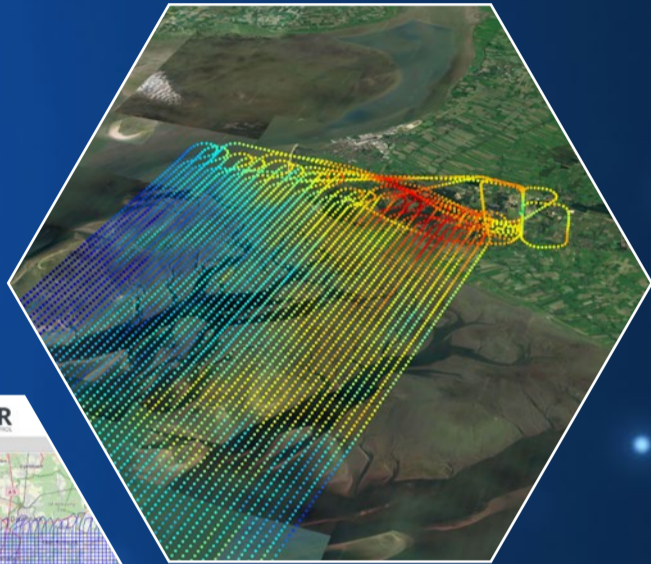
- 20 g turbulence resistance
- wide temperature range
- light-weight, low power
- economic cost

- Accuracy < 1mGal
- plug'n'play solution
- no scheduled maintenance
- gravity gradiometry
- post-proc software
iPosCAL-GRAV
available



iPosCAL-GRAV

Gravity Gradiometry Post-Processing



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

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



iPosCAL-SURV

IMU+GNSS+X Post-Processing Software

iPosCAL-SURV

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

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

PPP and DGNS
processing included;
also support of GNSS
denied mission processing,
multi-base and multi-rover,
multi-odometry, iMAR's lead-
ing 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

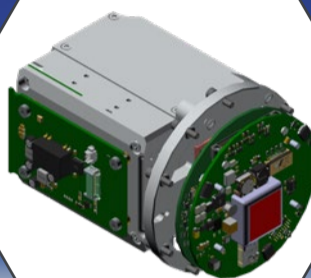
PIPELINE SURVEYING

Localization Tools for any Diameter



iIPST-FMS-E (FOG)

IMU with pressure resistant enclosures;
diameter > 6"



iIPST-FMS-6 (FOG)

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

Post-Proc software
iPosCAL-PST supports
dedicated processing

Position accuracy:
typically 1 m per 2 km
distance travelled

HARDWARE SETUP:

- various I/Os
- support of 3 wheel sensors
- pressure resistant enclosure
- power consumption <15W
- weight approx. 4 kg



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Defence



DEFENCE

Land



iCOMBANA

INS/GNSS Solution
Inertial navigation & guidance systems for north finding, true heading determination, stabilisation and motion analysis - e.g. for combat vehicle applications



iPRENA

INS/GNSS Solution
High performance inertial navigation and surveying systems for military applications, true north reference, fast and accurate gyro compassing



iSULONA

INS/GNSS Solution
Powerful MEMS based systems for inertial navigation, dead reckoning, surveying, guidance and control



DEFENCE

Mortar Alignment Systems



iEMAS

High precision Gyro
compassing Mortar Alignment
System with MRSI (Multiple
Round Simultaneous
Impact) capability



iLMAS

Lightweight Mortar
Alignment System, with GNSS
and/or Gyro based true
north for 81 mm
and 120 mm



iTAHS

Ultra lightweight Mortar
Alignment System for
60 mm



DEFENCE

Air - Avionics



iNAT-CFM



iNAT-RQT-400x
iNAT-FSLG-01



iNAT-M300

Hybrid INS/GNSS systems with MEMS, FOG or RLG sensors
iAvionics Suites with INS/GNSS, Magnetometer and AirData Computer

- Navigation
- Stabilisation
- Flight Guidance
- Flight Motion Detection
- Fixed and rotary wing A/Cs and UAVs
- MIL-STD qualified
- Customized Solutions



DEFENCE

Sea & Subsea

Navigation,
Guidance & Control
Systems for Ships, UUVs,
Submarines, Torpedoes

Stabilized Pedestals and
Gimbals for Antennas and
Naval Weapons

Deep Sea Sensors



iATTHEMO-
TRIDENT-Rx

Most accurate autonomous
True North and
Navigation



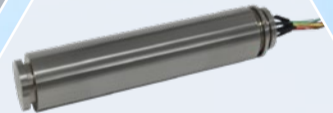
iTNAV

Strapdown AHRS in FOG
Technology for Heavy Weight
Torpedoes



iIPSC-PT-xx

Gyro stabilized Pan-Tilt
Platforms for mobile and
stationary applications, for
standard and customer
defined payloads



iTAHS

Sealed 3D Magnetic/Inertial
Sensor for Towed Subsea
Antennas. For up to
3'000 m Depth



DEFENCE

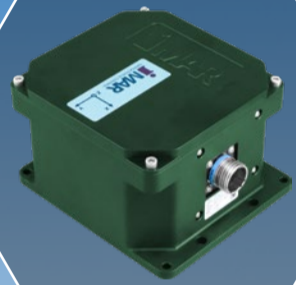
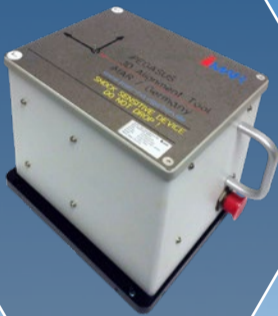
Transfer Alignment & Gun Calibration Systems

Transfer alignment between sensors and effectors, on static and moving platforms

Improvement of weapon accuracy by calibration of kinematic chain

Alignment of missile protection systems on mobile carriers

Easy to operate, independent from external references



iPEGASUS-HP

High Precision Gyro Based Transfer Alignment Systems

0.005° relative 3D accuracy @ 10 minutes

iPEGASUS-LT

Gyro Based Transfer Alignment System - Lite

0.02° relative 3D accuracy @ 10 minutes

2 mil sec lat absolute true north



STABILIZATION & CONTROL

Detection – Surveillance – Tracking



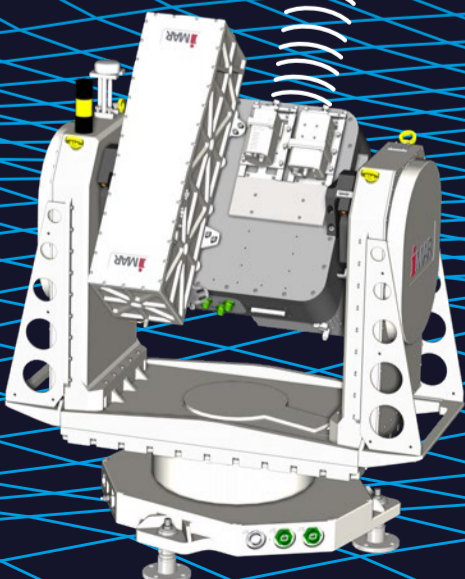
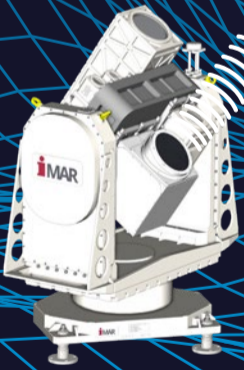
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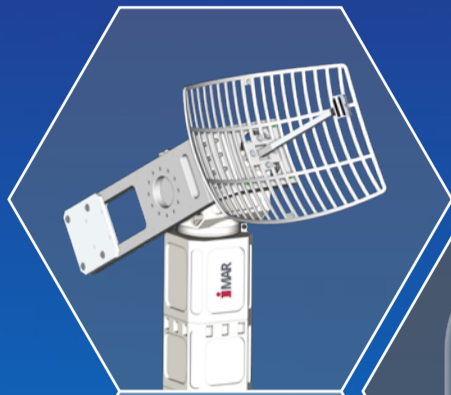
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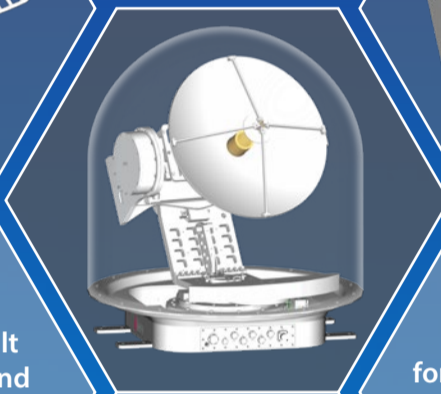
STABILIZATION & CONTROL

Customized Solutions



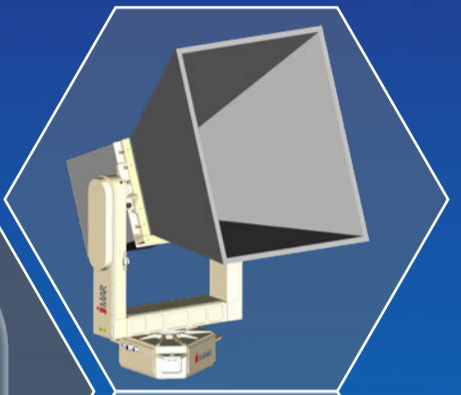
iPSC-PT-xx

Gyro stabilized Pan-Tilt Platforms for mobile and stationary applications, for standard and customer defined payloads



iPSC-ANTRAD

Multi axes stabilizers with high angular resolution and high dynamics, for land, sea and air applications



iPSC-TAP

Two-Axes Platforms for mobile and stationary land and sea applications, for several payloads and in different configurations





iLIANE

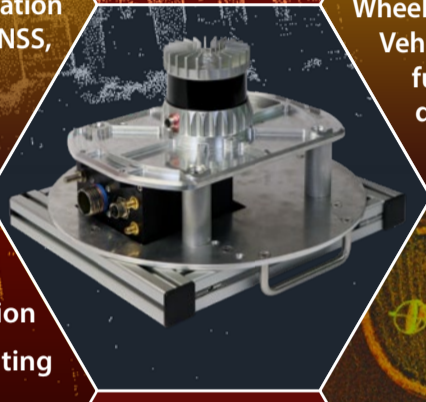
LiDAR aided Navigation Equipment

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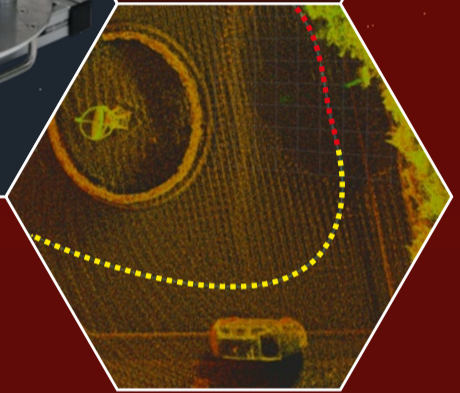
Accuracy of about 0.1 % of distance travelled, independent on mission duration (without any aiding, no GNSS, no odometer used)

iLIANE-LIGO

Seamless Integration of Imaging LiDAR / IMU / GNSS / Wheel Odometer. Most accurate Vehicle Localization even in fully GNSS and Radio denied Environment



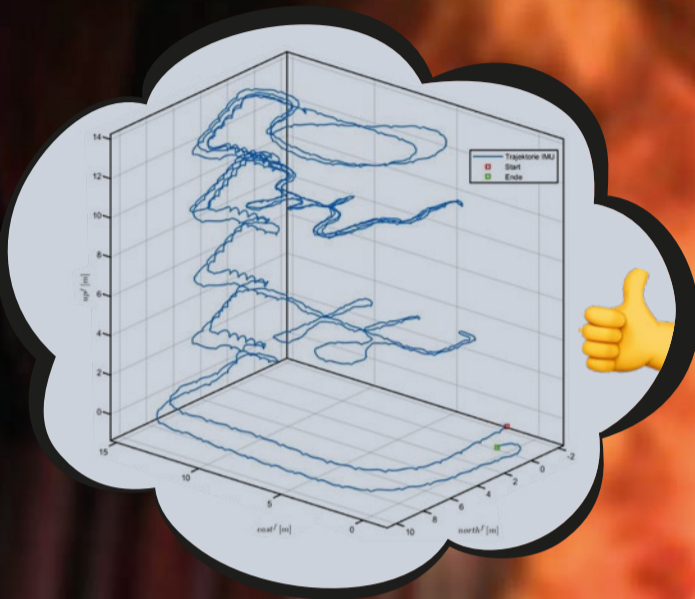
Autonomous Localization & Navigation
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Precise Infrastructure Surveying, bridging of long and systemic GNSS outages





iTHESEUS

Infrastructure-independent Pedestrian Navigator



iTHESEUS

Localization Assistance System for Special Forces.
Accuracy about 1% of total distance travelled, independent on mission duration and on any Infrastructure (neither GNSS nor WiFi nor beacons required)



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Defence



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

32U 366120 5459546

32U LV 66120 59546