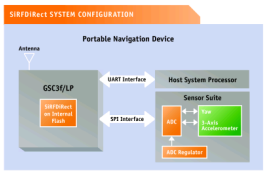
Company/Product	Link	Sample Picture	Price	features	Comment
Honeywell, DRM™4000 Dead Reckoning Module	http://www.magneticsensors.com/datasheets/DRM4000.pdf Ordering No: DRM 4000 Overview of similar products: http://www.magneticsensors.com/products.html Contact Customer Service at 1-800-323-8295 for more information.		USD 2995.- for the Evaluation Kit, USD 1990.- bare unit.	Blends GPS and dead reckoning data (via internal sensors) to an NMEA output. Suited for personnel on foot.	This just a pedometer, as clarified by a technician from Honeywell and it will not work in trains. DRM 5 and GyroDRM suffer from the same issue, I was told.
Honeywell DRM® - 5 Dead Reckoning Module, Evaluation Kit Available	http://www.ssec.honeywell.com/magnetic/datasheets/drm5.pdf		USD 3495.- for the Evaluation Kit USD 2495.- for the bare unit.	Similar to DRM 4000, with built-in GPS receiver. Evaluation Kit available. No USB, powered by an internal rechargeable Battery. By specification, this is not to be used on vehicles. Export-Controlled by ITAR.	Since no external GPS is attachable, initializing the device seems impossible. Not usable in trains.

Honeywell GyroDRM	http://www.ssec.honeywell.com/magnetic/datasheets/gyrodrm.pdf		USD 2995.- for the Evaluation Kit. No bare units available.	Gyro stabilized inertial navigation for personnel on foot. Has a built-in GPS receiver. A Evaluation Kit is available.	Seems to be an older version of DRM 5. Not usable in trains.
IMAR iDRPOS:	http://www.imar-navigation.de/datenbl/drpos_2pages_e.pdf		EUR 16000.- for a unit in 2D.	2D Navigation module using an external GPS receiver, attachable via RS-232/NMEA. An option for 3D is available.	Is not 3D. According to a sales person, this solution is not eligible for use in trains without odometer, because it would deteriorate fast.
Applanix POS TG	http://www.applanix.com/products/postg_index.php			Inertial, optical and GPS sensors provide millimeter-accuracy on tracks.	Large, and much too precise (probably also too costly)
Gladiator Technologies, Inc. LANDMARK20 AHRS DEMO KIT	http://www.gladiatortechnologies.com/DATASHEET/LandMark20_AHRS_DEMO_KIT_datasheet_051508.pdf			Inertial sensors in one housing, with USB connection. These sensors are mainly developed for sailing and flight application. A Evaluation Kit is available. Integrating and combination of the inertial data and external GPS fixes would have to be done in external software.	This is not a turn-key solution for this thesis, since integration of the inertial data is not done yet. Because integrating is not provided, the precision is probably questionable.

OXTS Inertial+	http://www.oxts.co.uk/default.asp?pageRef=102		UK £13300.-	Augments the NMEA data of an external GPS receiver with inertial measurements. There are also other models available. Drift without odometer is about 50m/minute	This product would be quite fine, but I don't have the budget for it.
VibTel RT3000	http://www.vibtel.com/EN/Products/InertialNavigationSystems/StrapdownInertialNavigationSystems/OXTS.MODEL.RT-3000.html	 Click to Zoom In	USD 74000.-	Supports an external GPS and povides data via CAN, RS-232, Ethernet. VibTel seems to be a reseller of OXTS.	Way beyond budget.

Sirf SiRFDiRect	http://www.sirf.com/products/SiRFDiRect_Product_Insert.pdf	 	Approx. USD 1500.-	Enhanced GPS + Dead Reckoning Software for Portable Devices. It sports 3 accelerometers and 1 gyro. There is an evaluation Kit available, that provides USB and RS-232 connection. Supply voltage is 9-24 Volts. NMEA protocol is supported. Dead Reckoning precision after 1 Minute is 225 meters. No direct access to the sensor data is possible.	Good option, smilar to the MIT-G, apart that we will not have access to sensor data for our own processing.
NovaTel SPAN-CPT	http://www.novatel.com/products/span_cpt.htm		USD 25'000.-	Combines GPS and inertial navigation. GPS is built in the device.	No possibility to feed our own GPS signal into the unit. Too costly.
Xsens MT9			Available in house	This seems to be a earlier version of the Mtx. This product is discontinued.	No possibility for attaching a GPS directly. Mathematical blending of GPS and inertial data would have to be done pro grammatically.

Xsens Mtx	http://www.xsens.com/en/products/human_motion/mtx.php	 		The MTx is a small and accurate 3DOF Orientation Tracker. It provides drift-free 3D orientation as well as kinematic data: 3D acceleration, 3D rate of turn and 3D earth-magnetic field. No external GPS. Evaluation Kit available. Noise of the accelerometers: 0.001m/s^2/sqrt(Hz)	No GPS, therefore no absolute referencing possible.

Xsens MTi-G	http://www.xsens.com/en/products/machine_motion/mtig.php	 	EUR 3790.- for the Development Kit EUR 3500.- for the bare Unit EUR 450.- for the SDK alone Delivery Time is 2 Weeks.	The MTi-G is a MEMS based Inertial Measurement Unit (IMU) and has an onboard Attitude and Heading Reference System (AHRS) combined with GPS and a static pressure sensor. There is a Sensor Development Kit available which contains the sensor and some accessories plus the SDK. The SDK has various possibilities to access the data, namely a WIN32 DLL. Deterioration according to a technical seller is 350m in a minute. The GPS has a tracking sensitivity of -158dBm according to specification. Does work without GPS for only 10 seconds. After that, only orientation information is provided. Noise of the accelerometers: 0.002m/s^2/sqrt(Hz)	No possibility for an external GPS. We can not update the reference position.

Xsens MTI	http://www.xsens.com/en/products/machine_motion/mti.php	 	EUR 1750.- for the bare Unit EUR 1990.- for the Development Kit	The MTi is a miniature, gyro-enhanced Attitude and Heading Reference System (AHRS). Its internal low-power signal processor provides drift-free 3D orientation as well as calibrated 3D acceleration, 3D rate of turn and 3D earth-magnetic field data. No GPS attachable. Noise of the accelerometers: 0.002m/s^2/sqrt(Hz)	Just data available. No position data is calculated. This is thus similar to our available sensor, the MT9.