ChemLog TT - Prezentácia výsledkov pilotných projektov za ZCHFP SR

Zmonitorovaná vzdialenosť: 245 000 km

Konferencia ZLZ SR
20. November 2014

ChemLog TT | TRACKING AND TRACING

Overview of T&T Solutions

www.onisystem.net

www.gpspoloha.sk

NAM system, a.s.

NAM system, a.s.
U Pošty 1163/13
735 64 Havířov – Prostřední Suchá
www.nam.cz

QADRA PLUS
Agátova 66, 92701 Šala, Slovensko
www.qadra.sk

Selected companies cooperating during pilot tests

BLOCK TRAINS WITH SELF-DISCHARGING WAGONS

DUSLO

ČLEN KONCERNU AGROFERT

INTERMODAL TRAINS

METRANS

BOHEMIAKOMBI

Rail Cargo Operator
Rail Cargo Group

TANK CONTAINERS

LC net

GCA

OMEGA SERVIS
CHARLES ANDRE

TUGBOAT

SPaP Slovenská plavba a prístavy a.s.

SHUNTING TESTS AND MONITORING OF SHUNTING LOCOMOTIVE

TŘINECKÉ ŽELEZÁRNY

MONITORING OF ROAD VEHICLES

STAVEBNÁ MECHANIZÁCIA s.r.o.
Bytčianska 123, 010 03 Žilina

KOLENO TRANSPORT, BÁNOVCE NAD BEBRAVOU

Koleno transport

LC Slovaktrans s.r.o.
Michalovce - Slovakia

AUTOŠKOLA
ĽUBOMÍR LIŠKA
7646464
ŽILINA

AB-SPED, S. R. O., ILAVA

AB - SPED

CHEMOSVIT CHEDOS, S.R.O. SVIT

CHEMOSVIT CHEDOS

ANTON BUBLÁK, S.R.O., RABČICE

TRANSBALKAN, S.R.O., STRÁNSKE

Overview of T&T Solutions

7 MONITORING DEVICES TESTED

Zameranie

	Cisternový kontajner	Štandardný uzavretý kontajner	Výmmenná nadstavba	Náves
Externý zdroj energie	iba u kontajnerov s elektrickým ohrevom prepravovaného nákladu	nedostupný	nedostupný	po pripojení k ťahaču
Umiestnenie monitorovacej jednotky	dostatočný priestor	problematickejšia inštalácia ak sú nutné vonkajšie antény	dostatočný priestor	dostatočný priestor
Ďalšie senzory	- kontakt uzáverov - teplota - iné v závislosti od prepravovaného produktu napr. tlak	- dverný kontakt - svetlo - teplota	- dverný kontakt - teplota - svetlo u skriňovej nadstavby	- dverný kontakt - teplota - svetlo u skriňovej nadstavby
Monitorovanie nezávislé od druhu dopravy	áno	áno	áno	áno

Zameranie

Zainteresované subjekty na monitorovaní nebezpečných vecí	Frekvencia posielania údajov o polohe	Údaje o náklade
vlastník/prenajímateľ prepravnej jednotky	veľmi nízka (1-5 hlásení denne) prípadne kombinovaná s vyššou frekvenciou zaznamenávania polôh a iných udalostí bez ich okamžitého odosielania	nepotrebné
prepravca	informácie o polohe nie sú potrebné veľmi často, prípadne sú čiastočne alebo úplne dostupné od jednotlivých dopravcov, prípadne je ich možné požiadať len keď je to potrebné	nepotrebné vedia aký náklad sa prepravuje
dopravca	vlastný systém sledovania dopravných prostriedkov – vozidiel/vlakov/plavidiel	
záchranné zložky	informácia o polohe len v prípade nehody – nie je možné jednotku úplne vypnúť vrátane senzorov, v prípade vypnutého GPS modulu opätovné hľadanie pozície môže spôsobiť značné oneskorenie a väčšiu nepresnosť polohy (možnosť zaslať poslednú 1-2 pozície pred vypnutím modulu, prípadne hlásenie bunky GSM) informácia o polohe a alarmovom stave buď priamo z jednotky alebo z IS poskytovateľa	potrebné

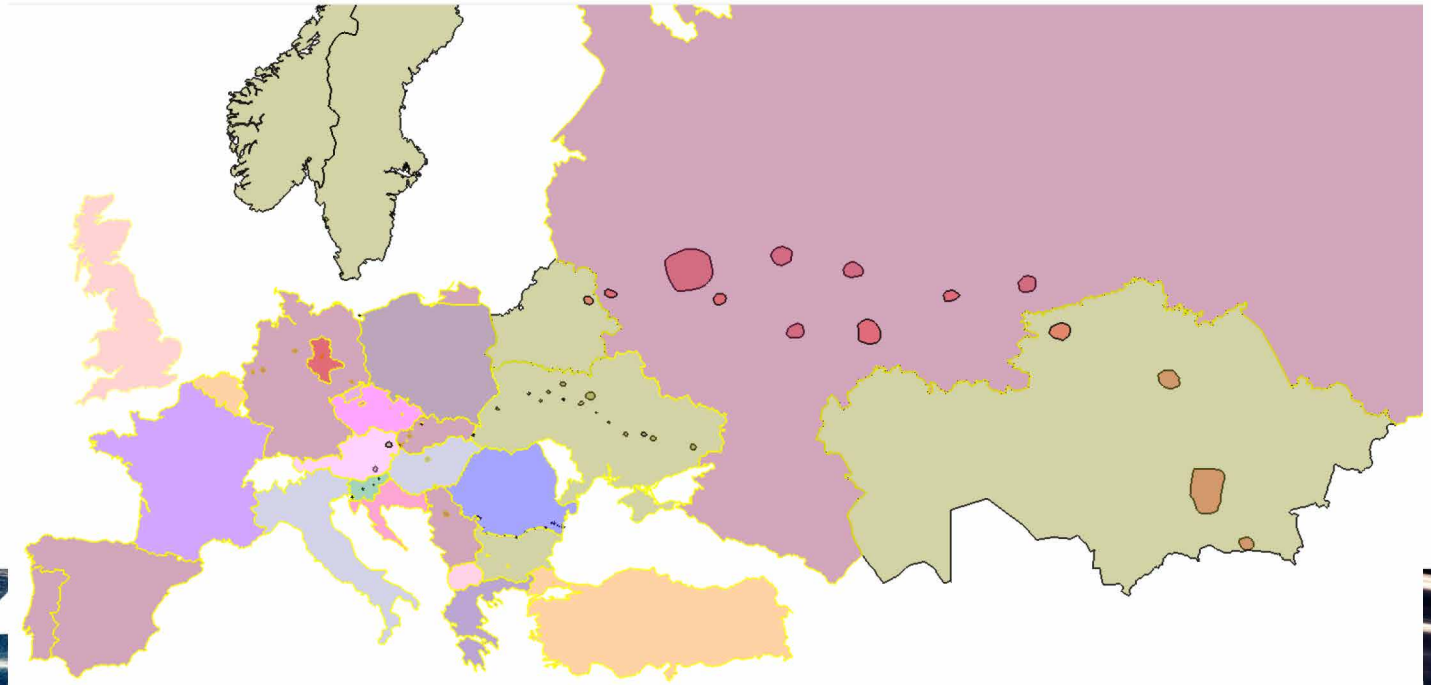
Zameranie

Zainteresované subjekty na monitorovaní nebezpečných vecí	Frekvencia posielania údajov o polohe	Údaje o náklade
územné celky z hľadiska štatistických údajov o pohybe nebezpečných vecí **- geofencing hraníc krajín, krajov**	nízka frekvencia zaznamenavania poloh a nízka frekvencia odosielania údajov o polohe v prípade hlásenia len vstupu/výstupu z oblasti pre štatistické účely vyššia frekvencia zaznamenavania poloh a nízka frekvencia odosielania údajov o polohe v prípade hodotenia trás, po ktorých sa pohybujú nebezpečné veci pre štatistické účely	potrebné
Krízové riadenie **- geofencing hraníc malých oblastí ako tunely, oblastí s ochranou vodných zdrojov, centrá miest**	vysoká – riziko nezaznamenania vstupu/výstupu z oblasti (napr. 1 hlásenie za 20 sekúnd alebo menej)	potrebné
Krízové riadenie **- množstvo prepravných jednotiek s nebezpečnými vecami v sledovanom území**	vysoká (napr. 1 hlásenie za 10 minút alebo menej)	potrebné

Route Information

Covered countries: Test Period: 4.6.2013 – 31.8.2014

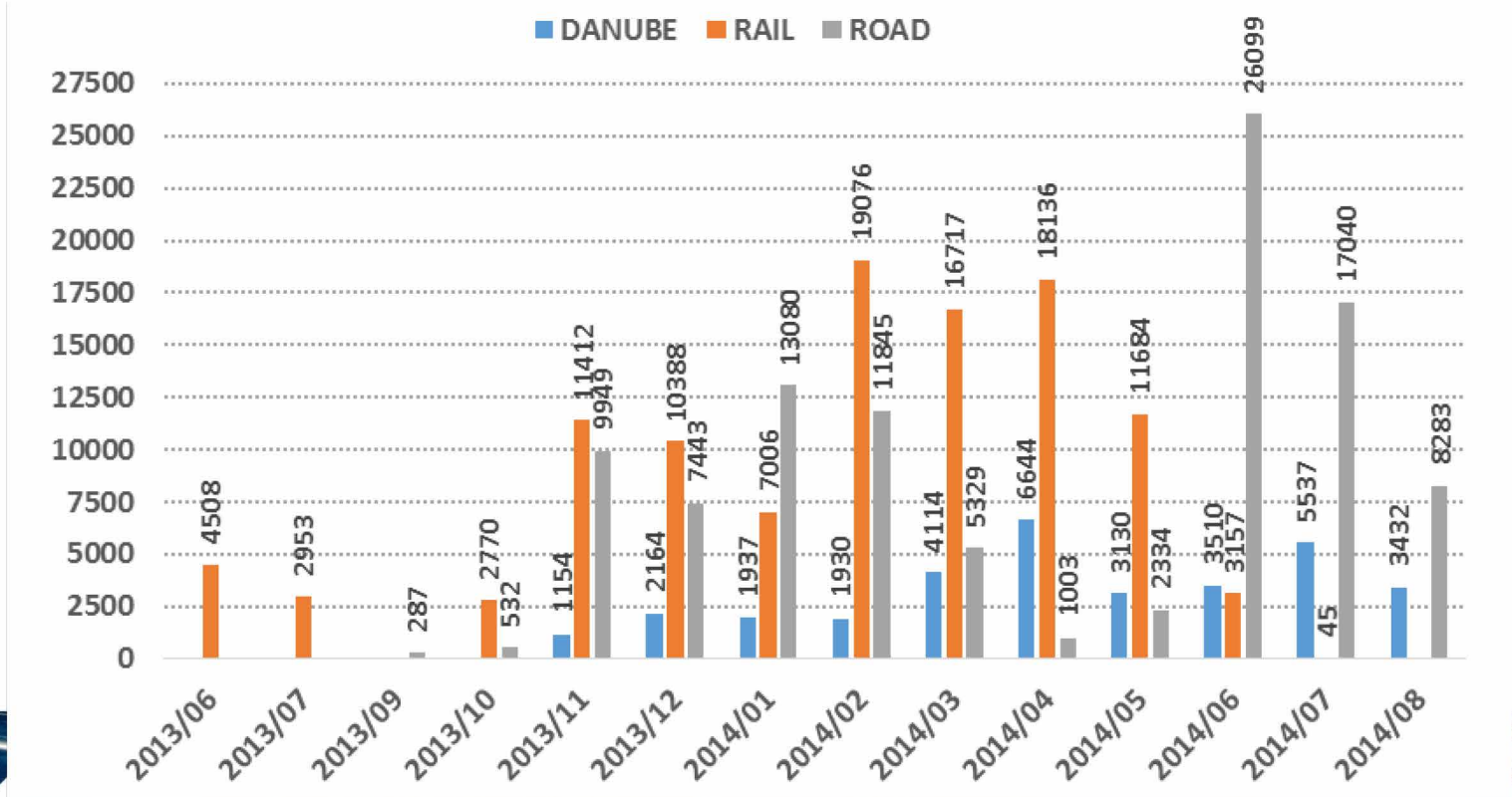
Slovakia, the Czech Republic, Ukraine, Hungary, Poland, Austria, Russian Federation, Belarus, France, Germany, Belgium, the Netherlands, Spain, Portugal, Serbia, Macedonia, Greece, the United Kingdom, Sweden, Norway, Italy, Croatia, Bulgaria, Romania, Turkey, Kazakhstan, Latvia, Lithuania, Moldova.



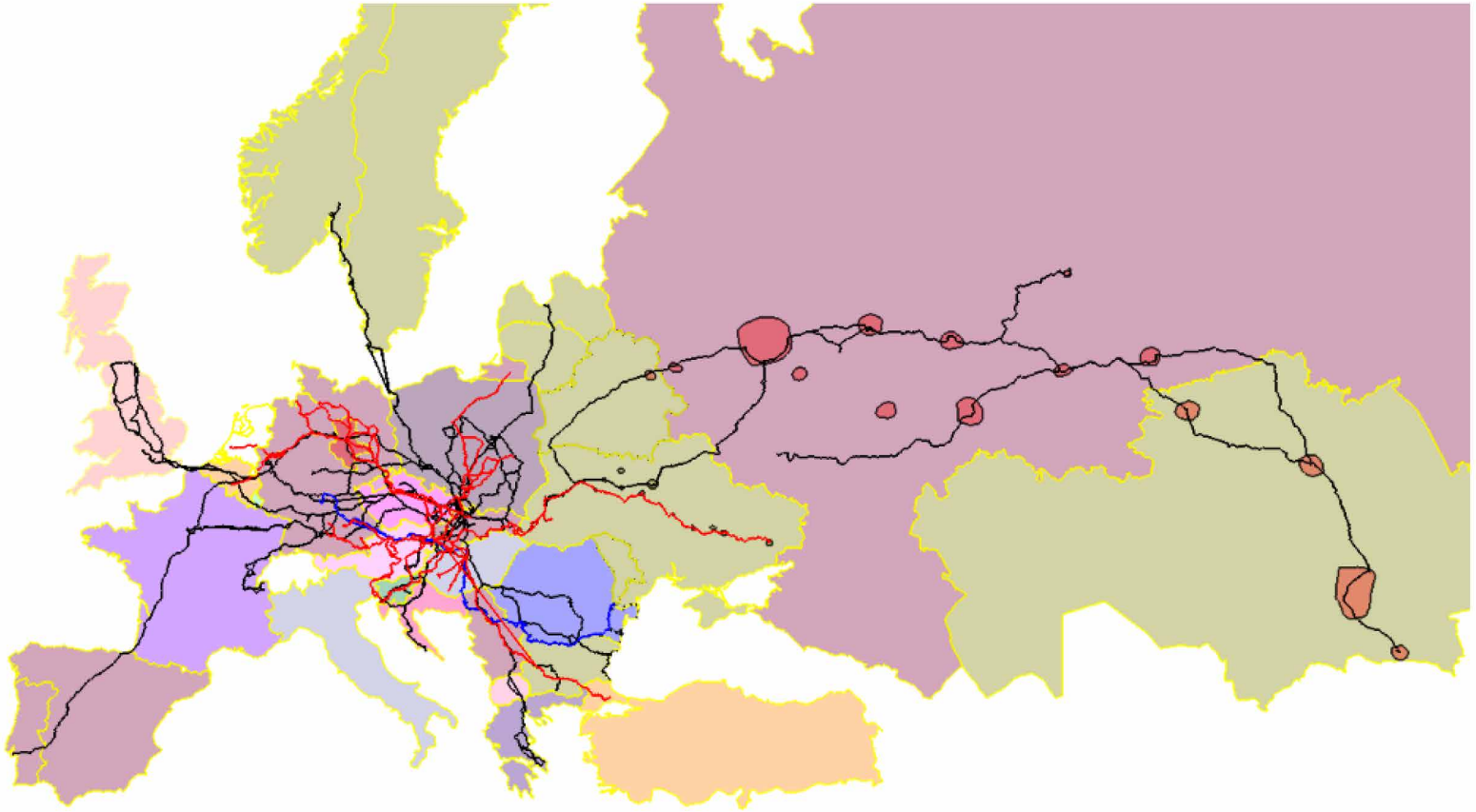
Route Information

Track distance: **245 000 km**

Modal Split: Rail – 44,09 %, Road – 42,2 %, Inland navigation – 13,72 %



Route Information



BLACK – ROAD, RED, BLUE-INLAND NAVIGATION

Route Information

Monitoring of block trains in chemical company: 06-07, 10-12/2013, 01/2014 – 18 955 km

Monitoring unit H2540A (left) and unit H3283A (right) used for monitoring block trains in chemical company.

Route Information

Intermodal transports of tank container between Duisburg and Ukraine – ROAD/RAIL / 11.11.2013-23.12.2013 / 7 156 km

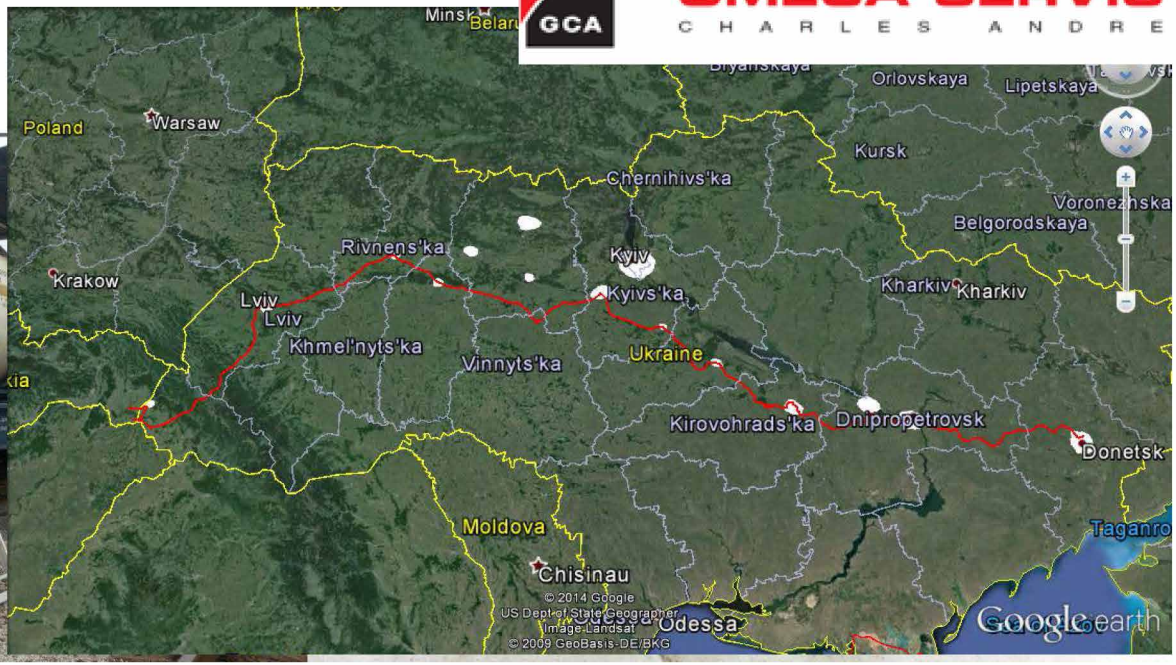
Tank co… …dder (right)

Slovaktrans s.r.o.
Michalovce - Slovakia

METRANS

Route Information

Intermodal transport of tank container between Slovakia and Ukraine and back – RAIL / 7.3.2014- 31.3.2014 / 3 248 km



Tank container EMT6-TCLU9900341 (UN T11 / L4BN) and unit H2540A installed under walking grids

Route Information

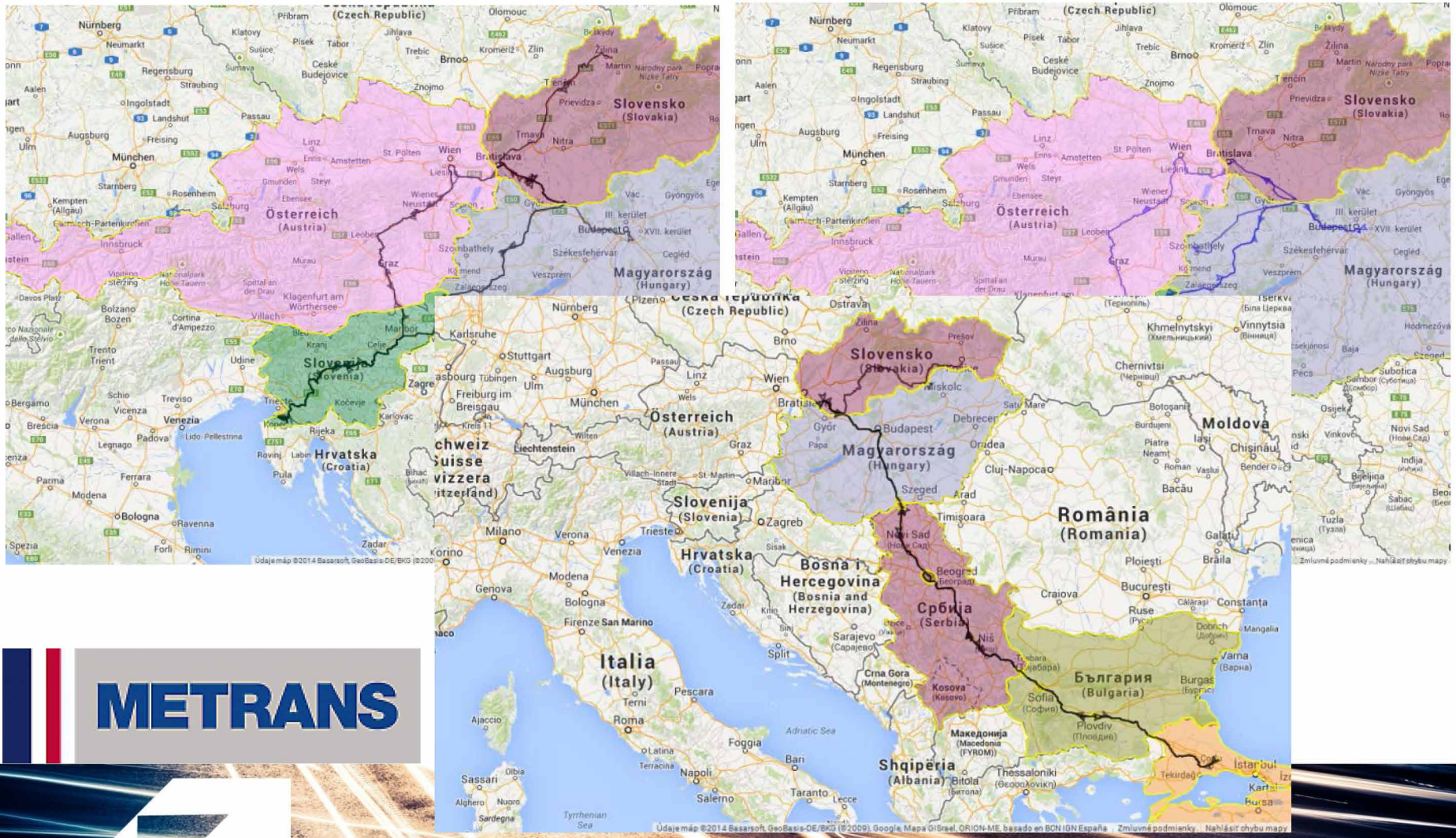
Container trains between Slovakia/Czech Republic/Hungary and Koper, Istanbul, Kaliningrad area, Hamburg, Bremerhaven, Rotterdam / 20.11.2013 - 24.5.2014 / 54 802 km

First container train of company METRANS monitored to Turkey and unit H3283A on chassis of wagon Sggmrss 90 under the containers

METRANS

Rail Cargo Operator
Rail Cargo Group

Route Information



METRANS

Route Information

23.1.-19.2.2014
5 rounds – 8655 km

Rail Cargo Operator
Rail Cargo Group

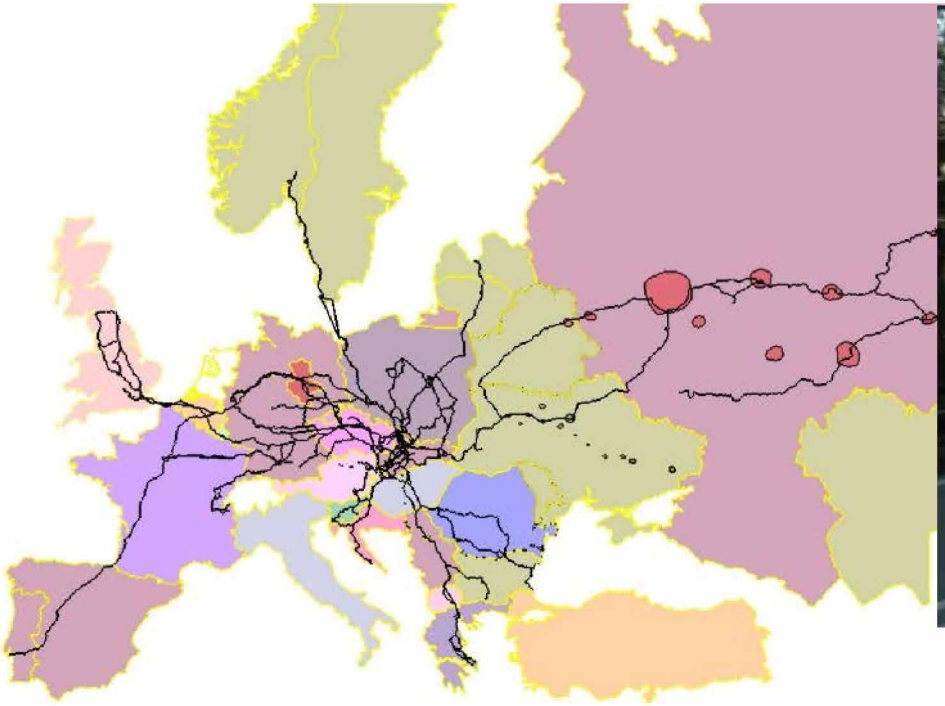
Route Information

Intermodal trains carrying containers, swap-bodies and semi-trailers between Czech Republic and Trieste, Hamburg, Duisburg, Charleroi / 3.2.2014 – 24.6.2014 / 32 252 km

Unit H3228A installed on chassis of co
wagons (middle) and pocket

BOHEMIAKOMBI

Route Information



Road vehicles monitored in several countries of Europe, Russian Federation and Kazakhstan / November 2013 - August 2014 /102 405 km

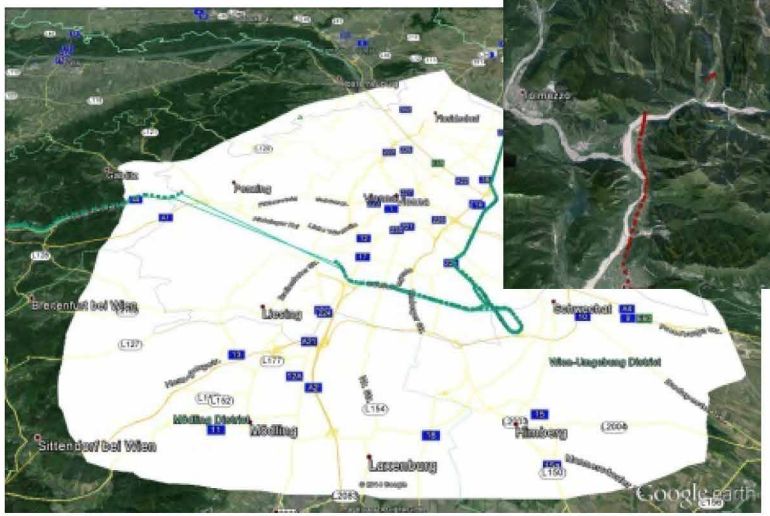
Route Information

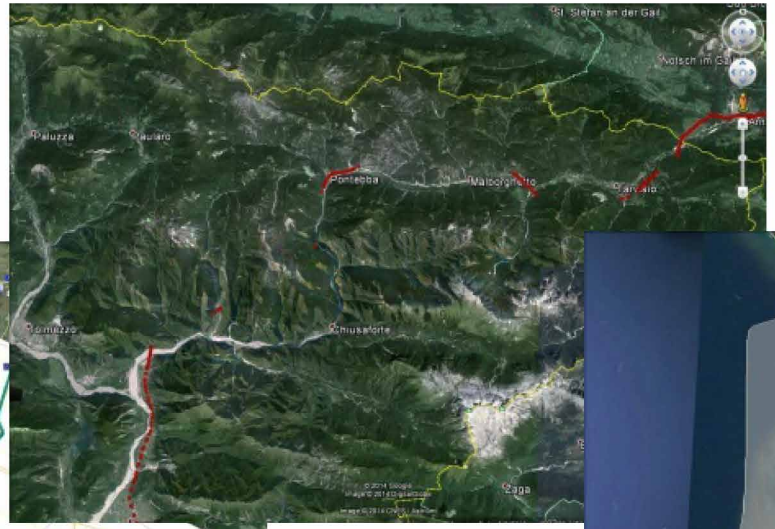
Tugboats monitored by monitoring units H3216B (left) – exit from Gabčíkovo chamber (13.11.2013) and H3227B (right) – loading of refinery products into tank vessels in Ölehafen Lobau Wien (13.3.2014)

GPS Signal Quality

GPS quality is as usual for commercially available GPS modules. GPS coordinates are missing in road and rail tunnels and on ferries. Units should not be used for exact tracking of e.g. locomotives on rail sidings, handling equipment in terminals due to higher inaccuracy of gps coordinates on small area.

Wien





Tarvisio

Trieste

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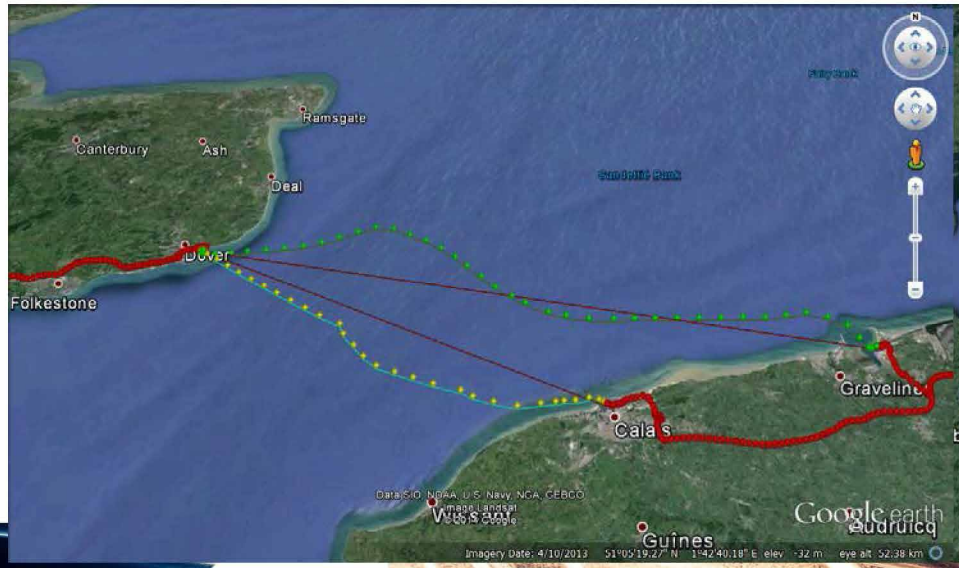
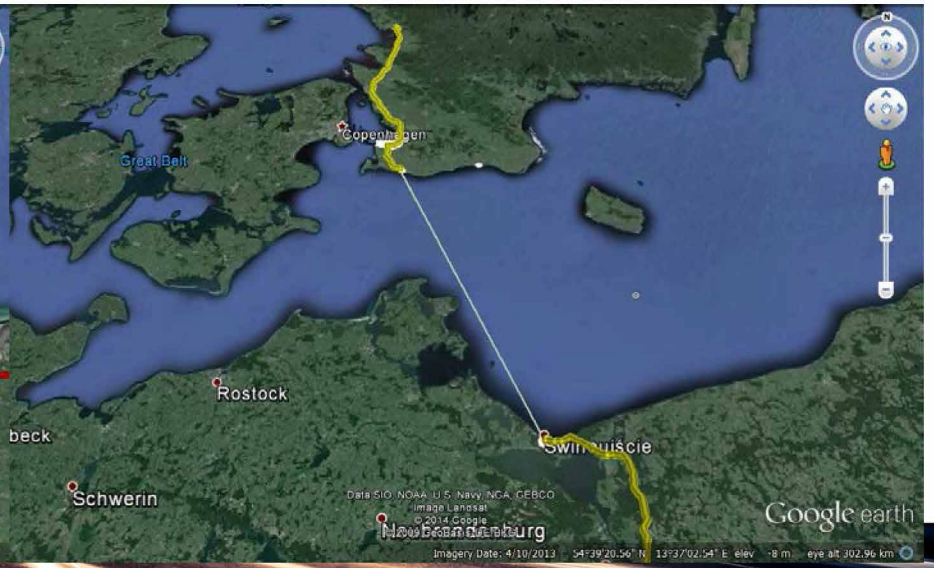
BE-UK, UK-FR ferrries
Dunkerque – Dover
Dover-Calais



PL-SE ferrries
Swinoujscie - Trelleborg



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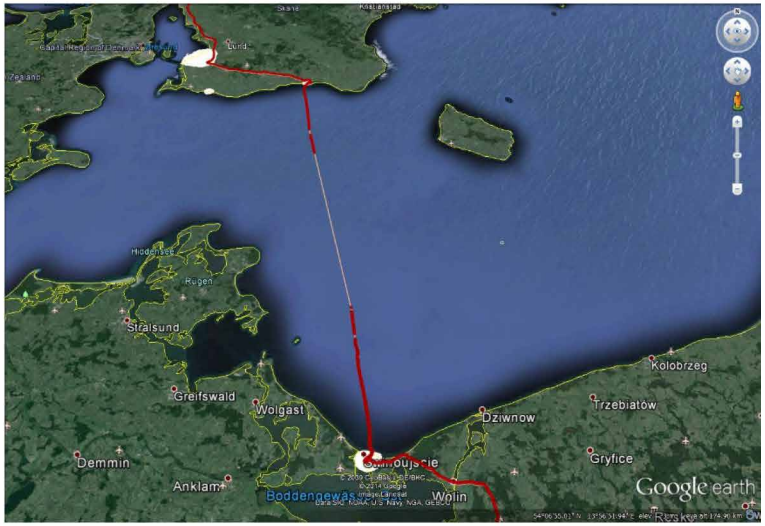
Split-Supetar
Supetar-Split

PL-SE ferrries
Swinoujscie - Ystad



GPS Signal Quality

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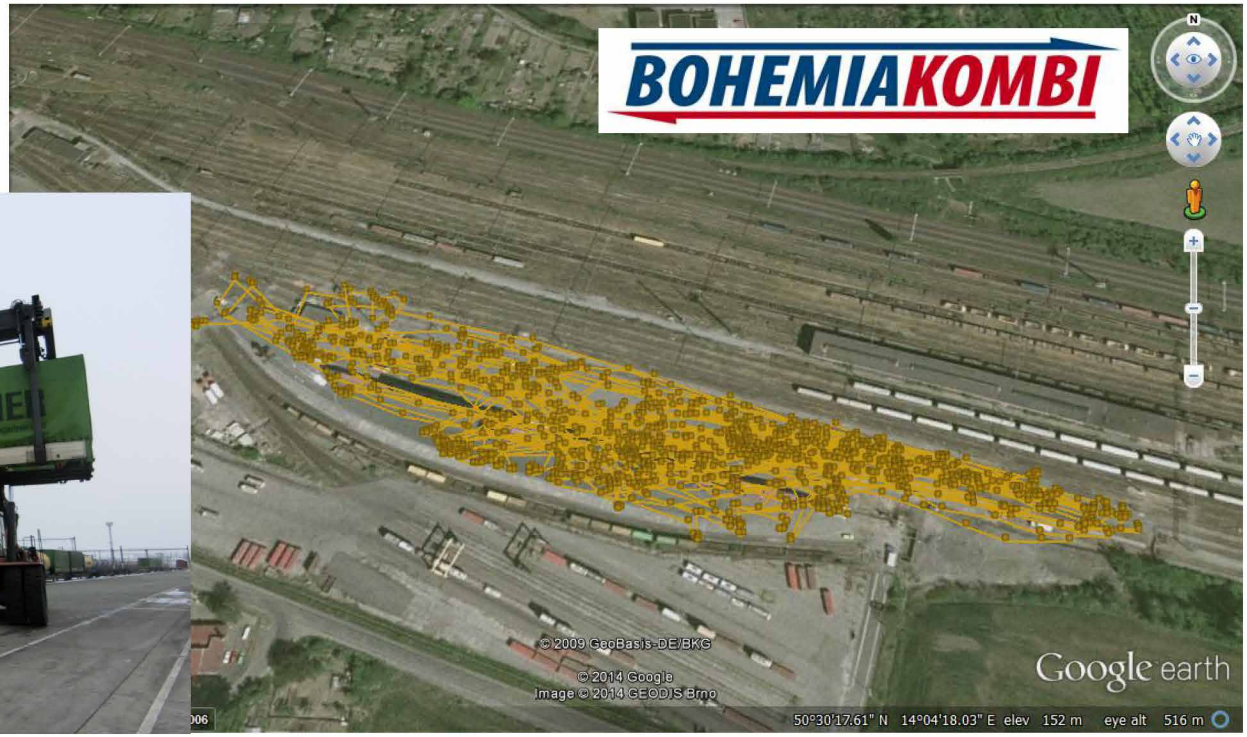
One day in Lovosice terminal



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TŘINECKÉ ŽELEZÁRNY

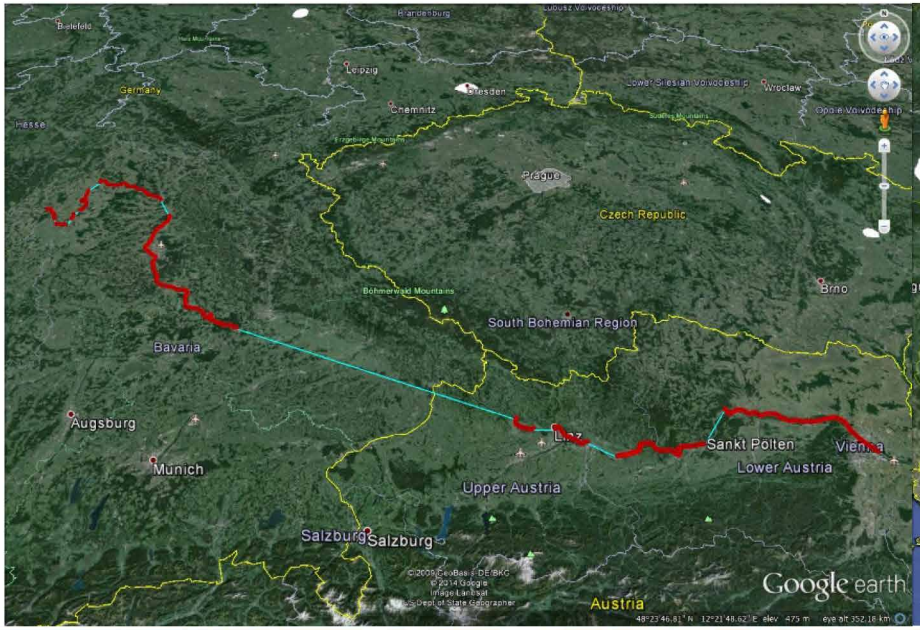
Several days in Trinec steel plant

GPS Signal Quality

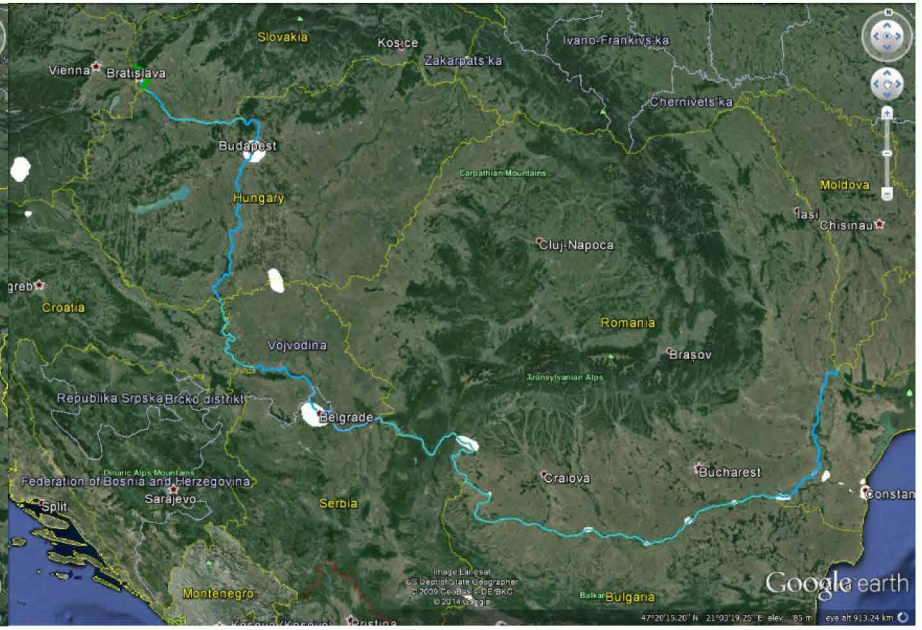
GPS quality is as usual for commercially available GPS modules. GPS coordinates are missing in road and rail tunnels and on ferries. Units should not be used for exact tracking of e.g. locomotives on rail sidings, handling equipment in terminals due to higher inaccuracy of gps coordinates on small area.

Tugboats

Vienna - Wurzburg



Galati - Bratislava



GPS Signal Quality

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E-Call – MSD (EN15722) specifies unreliable position when it is more than +/- 150 m with 95% reliability.

PositionCanBeTrusted:

true = Reliable position

false = Uncertainty in position

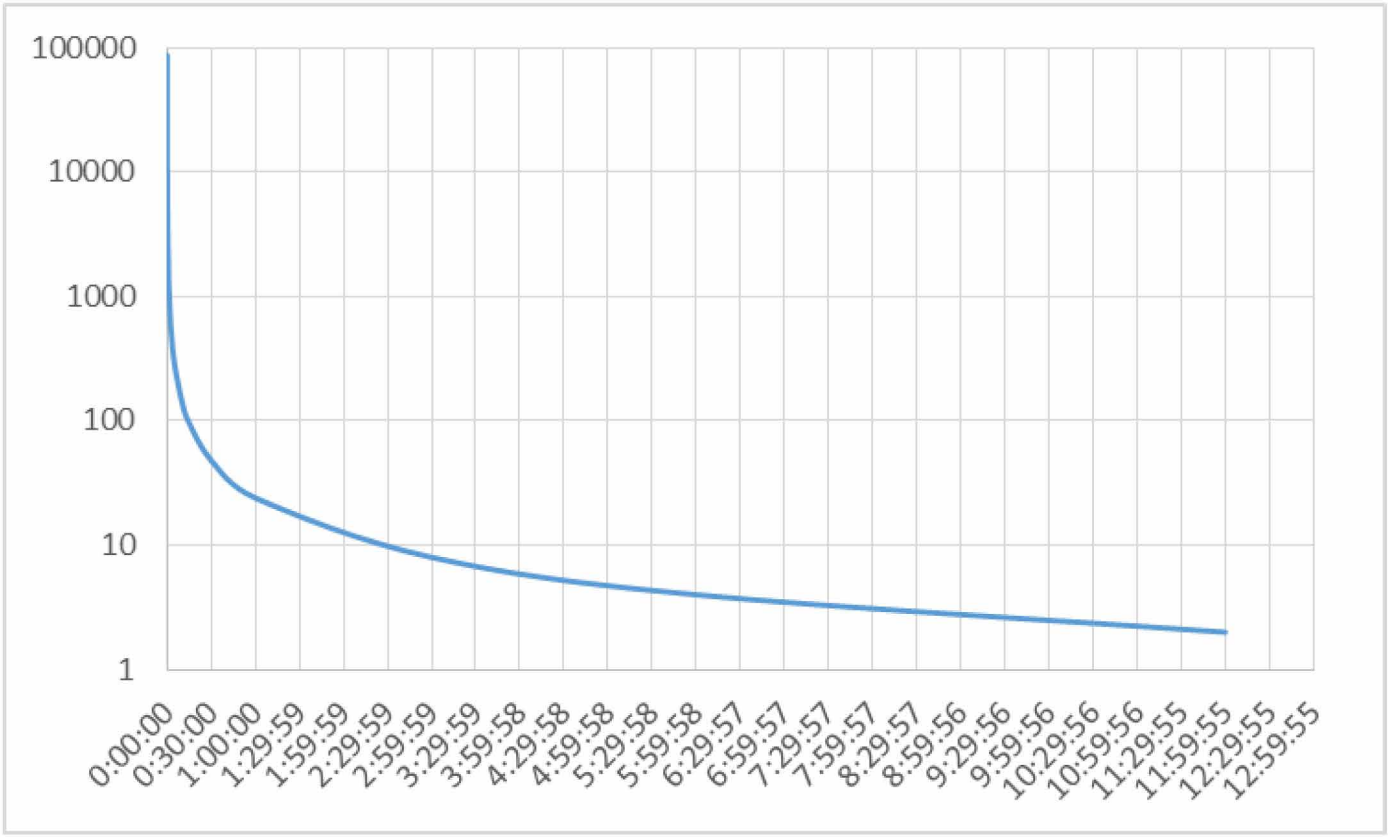
NAM units have internal filter of strange positions.
Dilution of precision is not logged from units.

During one test (SK,CZ) unit worked also in closed maritime container without any loose of GPS coordinates.

Communication

Frequency

Frequency	Number of coordinates for one day
12:00:00	2
6:00:00	4
3:00:00	8
1:00:00	24
0:30:00	48
0:15:00	96
0:10:00	144
0:05:00	288
0:03:00	480
0:02:00	720
0:01:00	1440
0:00:20	4320
0:00:10	8640
0:00:05	17280
0:00:01	86400



Communication

Frequency

GPS coordinates are logged every 10 seconds in the territory of Czech Republic and every 20 seconds outside this territory. During movement GPS is continuously running and calculating the route distance, speed data from GPS coordinates every second. The data are transmitted to onisystem every minute.

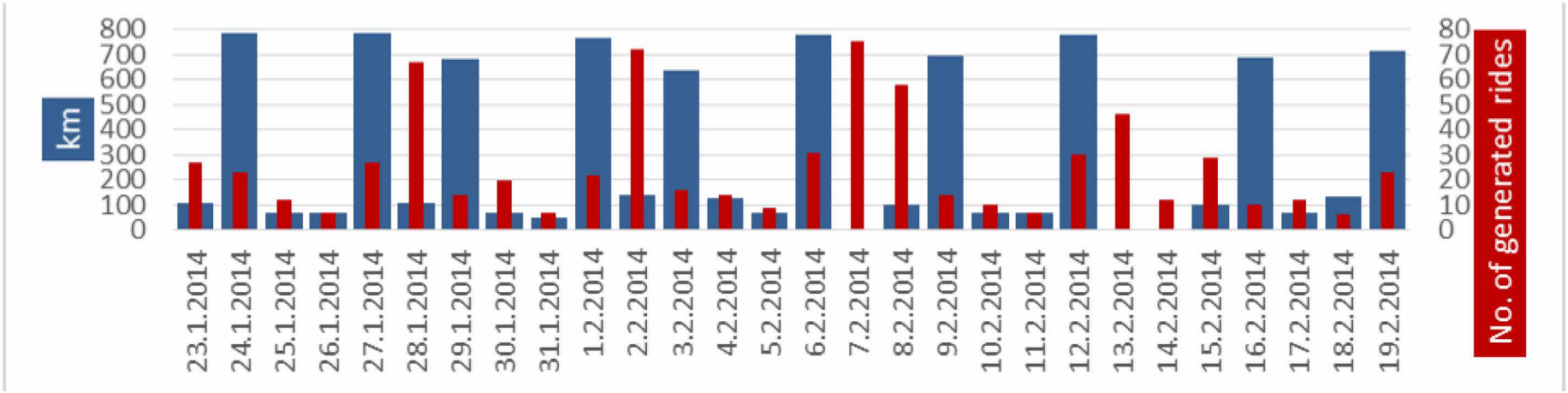
The frequency of coordinates and operation of GPS and GSM modules can be set also to higher time limits where the operation time of the device will be longer.

Communication

Sleep modus

Rail Cargo Operator
Rail Cargo Group

Container train: Slovakia-Kaliningrad area

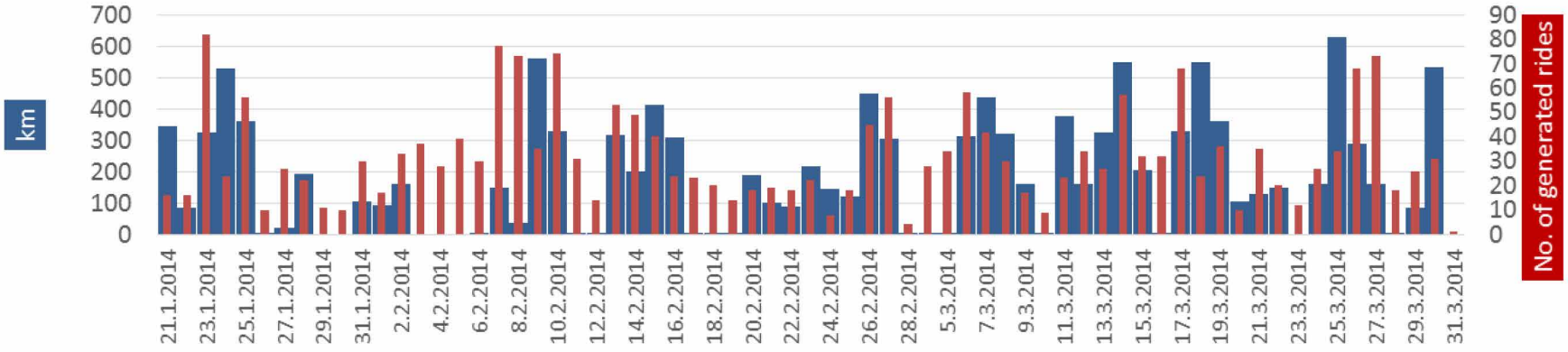


Communication

Sleep modus

METRANS

Container train:
Slovakia- Turkey



Communication

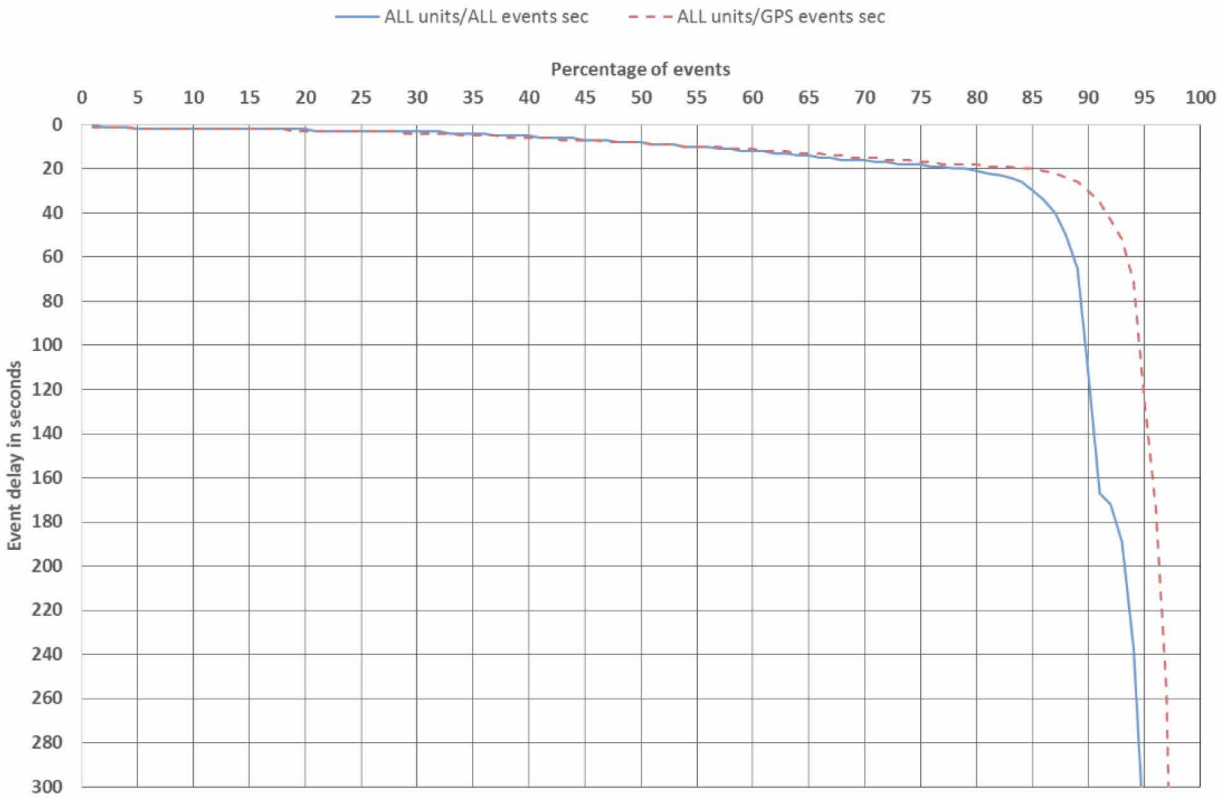
Communication GSM Quality

GSM signal was mostly available during pilot testing. GSM signal was not available in road and rail tunnels and on ferries. The places with no GSM/GPRS coverage also exist. GSM communication could be also problematic in international transports when the unit is logging to another network in neighboring country. This can be problematic for GPS module to connect to new network.

Communication

Communication GSM Quality

Five percent of all events was sent with transmission time over 300 seconds.

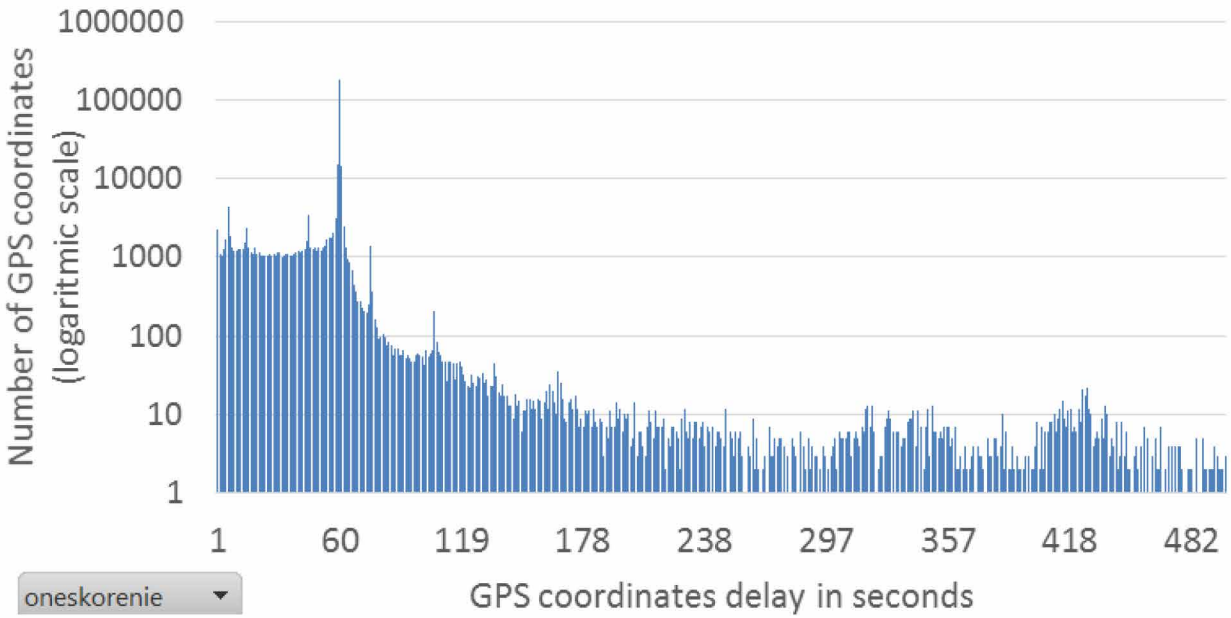


The data are evaluated from 4 milion events.

Communication

Communication GSM Quality

Frequency of transmission of GPS coordinates is 1 minute.



The data are evaluated from 300 000 coordinates – all NAM units.

Energy

Energy supply
Rechargable batteries – 5200 mAh – 42000 mAh

Estimated lifetime of battery: 6 to 35-50 days (20 seconds frequency of GPS coordinates, GPS and GSM modules continuously in operation during ride). Frequency of data transmission 1 minute.

Accelerometer sensitivity and time frequency must be optimised for the needs of chemical company.

Additional information

Additional information NAM units

Temperature: Internal temperature sensor. The temperature is recorded at the beginning and at the end of each ride. When no movements – 2 values per day.

Shock Sensor – Internal triaxial accelerometer

Others: driving style evaluation, allarms

Shock Sensor functionality: movement detection and crash events detection, no raw data available

Mounting to container: Magnet or fix
Robust: YES
Explosion proof : NO

Additional information

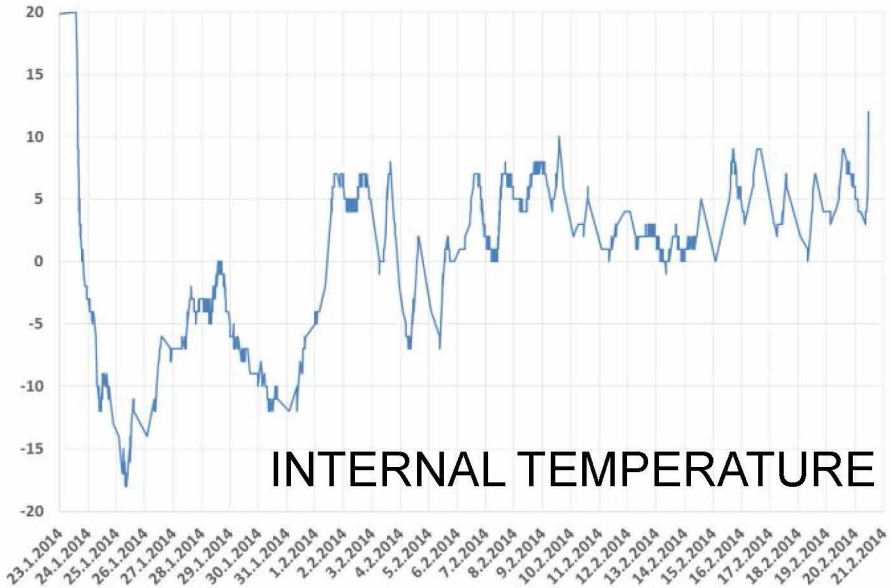
Additional information NAM units

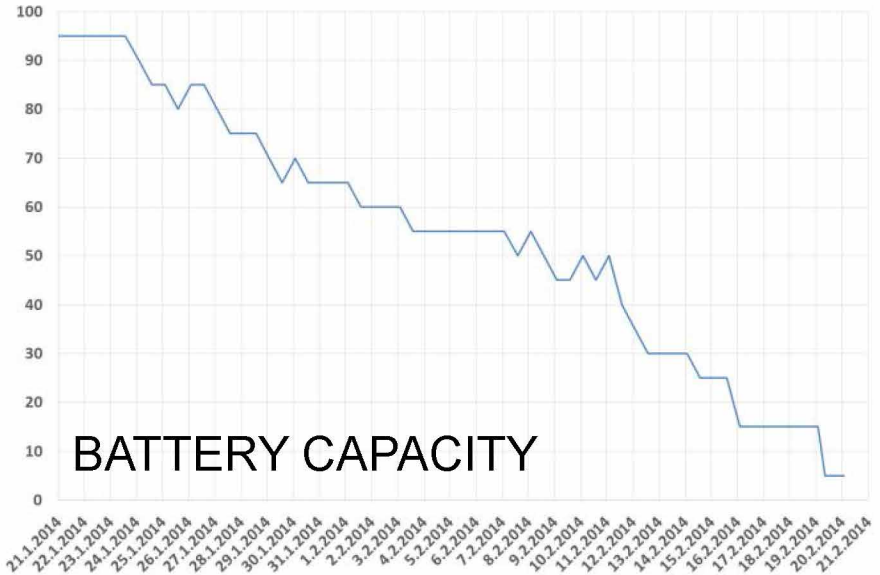
Temperature: Internal temperature sensor. The temperature is recorded at the beginning and at the end of each ride. When no movements – 2 values per day.

Energy

Rail Cargo Operator
Rail Cargo Group

Container train:
Slovakia-Kaliningrad area
8655 km





Additional information

Additional information NAM units

Shock Sensor – Internal triaxial accelerometer

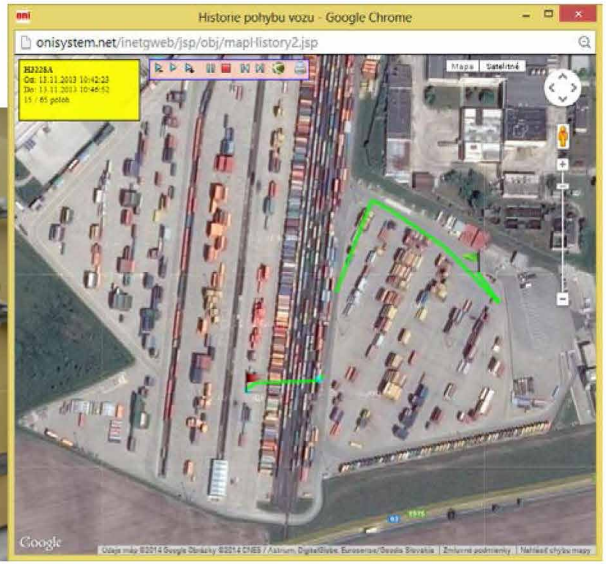
Shock Sensor functionality: movement detection and crash events detection, no raw data available

- Events
  - Crash at parking place – small shocks
  - Car wheels theft – small inclinations
  - Vehicle towing – larger inclinations
  - accident – defined shock and zero speed
  - Acceleration max for each ride

Additional information

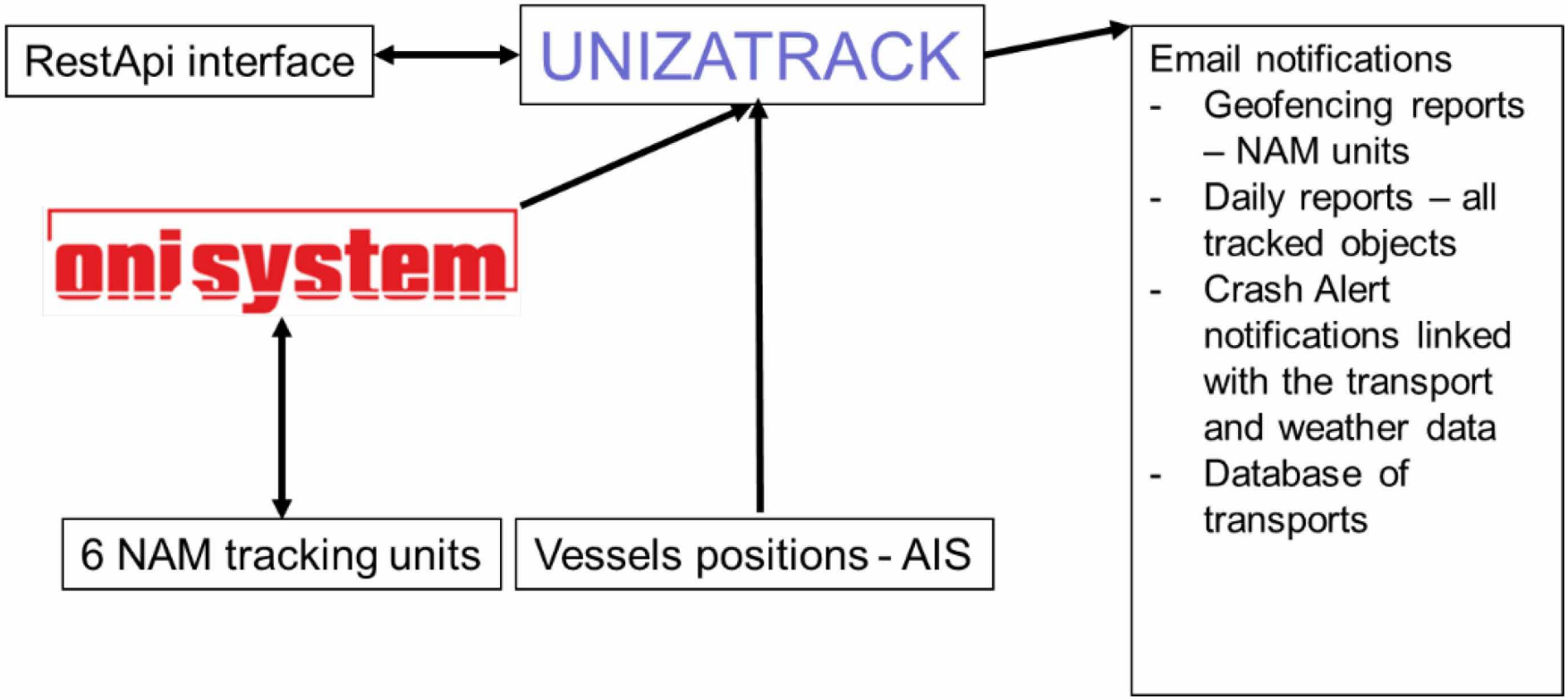
Additional information NAM units

Shock Sensor – Internal triaxial accelerometer



Software / Use of information

www.onisystem.net – web-based data storage and evaluation portal
UNIZATRACK - MySQL database and evaluation portal



Software / Use of information

www.onisystem.net – web-based data storage and evaluation portal
UNIZATRACK - MySQL database and evaluation portal

www.onisystem.net – information system used by NAM System
Maps
Alarm settings
Reports (battery, accident)
rides, itinerary, events database, system settings
evaluation of driving style

UNIZATRACK

- UNIZATRACK Geofencing reports

Unit H2540A entered the region Samara at 2014-06-25 12:11:01.0. map
Address: avtodoroga Ural, Samara Oblast, Russia
Speed: 78.0
Battery status: 15.0 (2014-06-25 12:08:14.0)

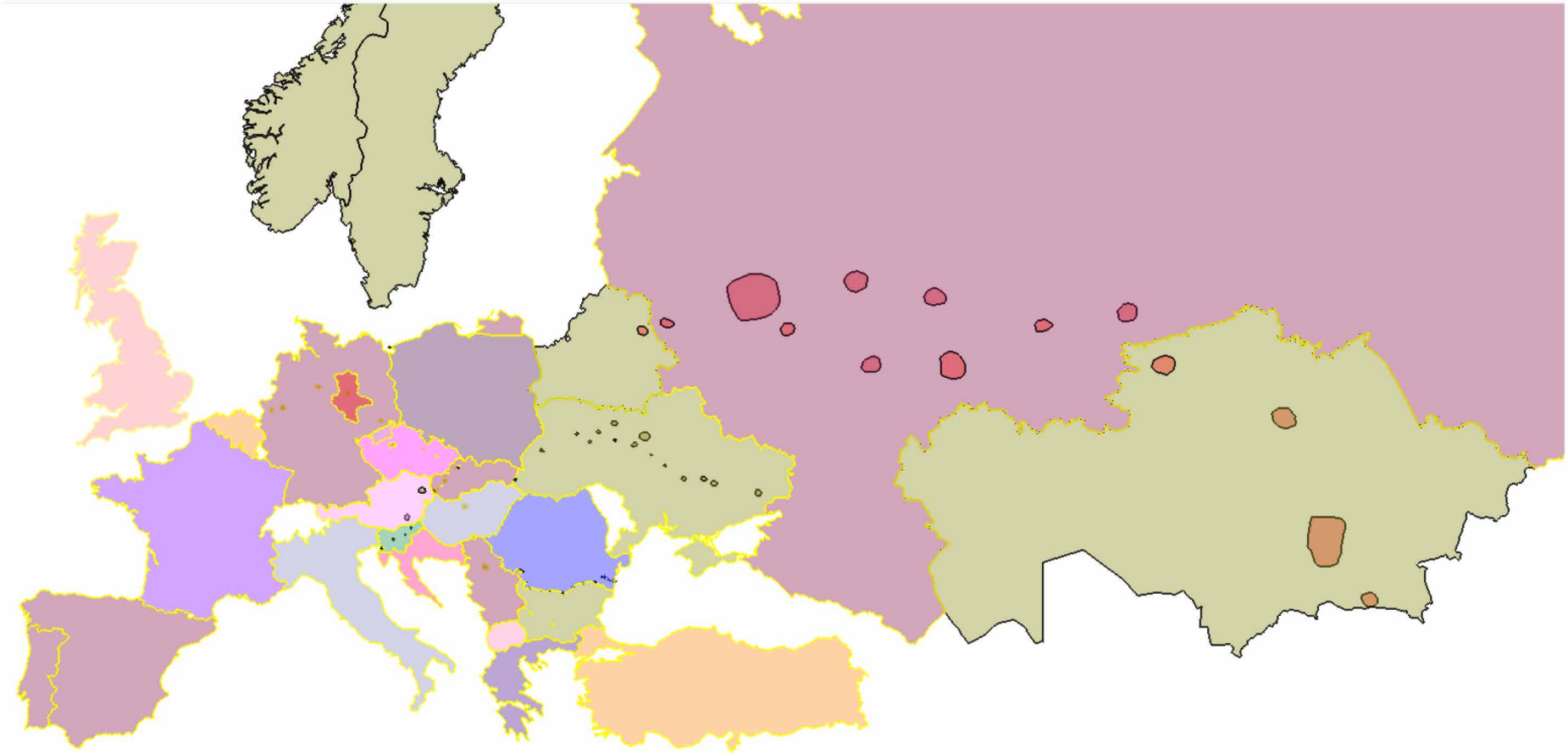
Transport

Transport ID	K01
Start time	2014-06-03 10:00:00.0
Start address	Kazachstan
Dest time	----
Dest address	Slovakia
UN codes	1263
Desc	UN 1263 PAINT,3,III,(D/E) 350 drums (1A1), 16 pallets - 22500 kg

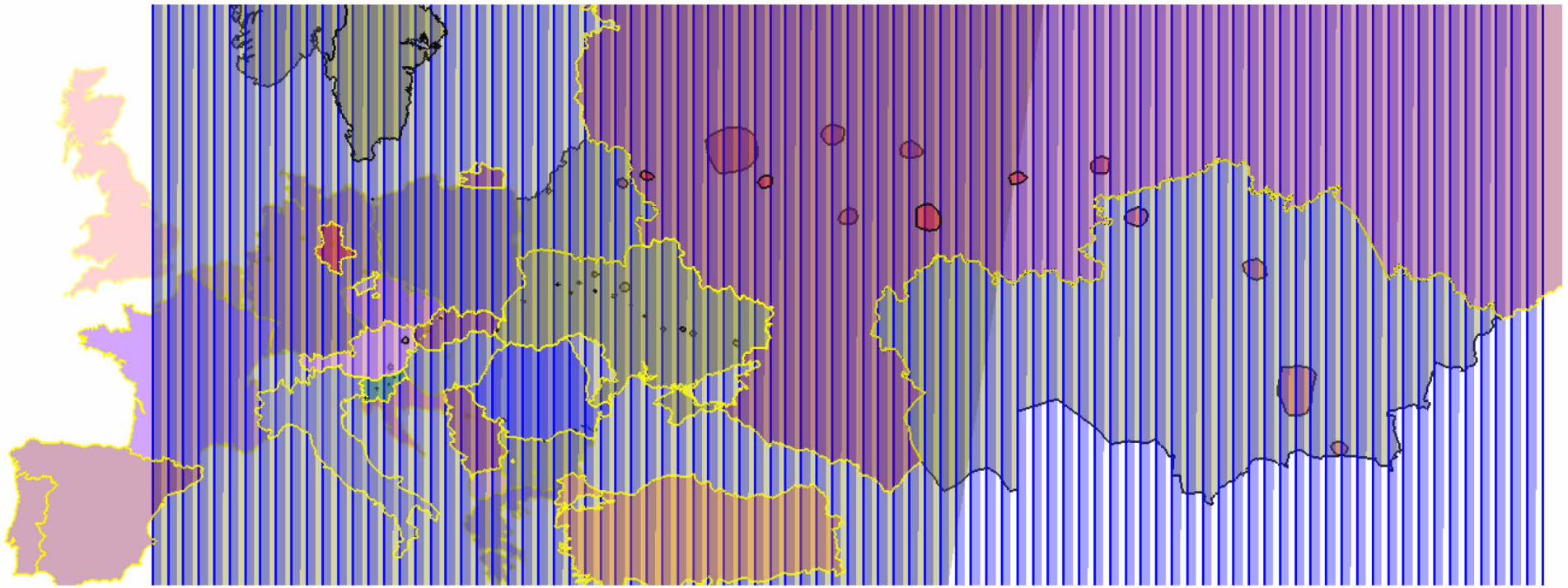
Weather

observation_time	10:11 AM
weatherDesc	Partly Cloudy
cloudcover	75
visibility	10
temp_C	21
humidity	35
pressure	1011
precipMM	0.0
winddir16Point	W
winddirDegree	260
windspeedKmph	19
weatherIconUrl	image weather

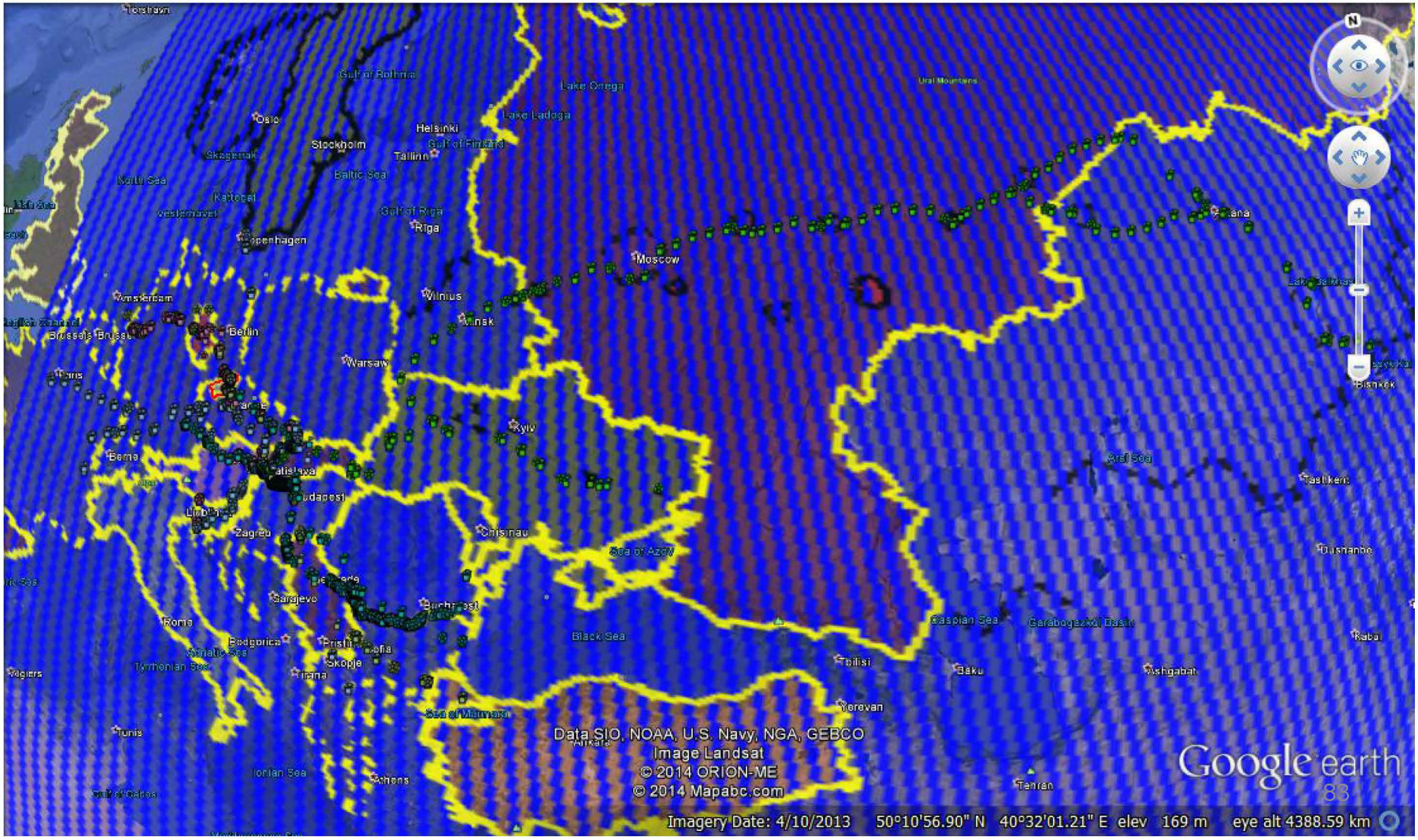
UNIZATRACK - Geofencing areas



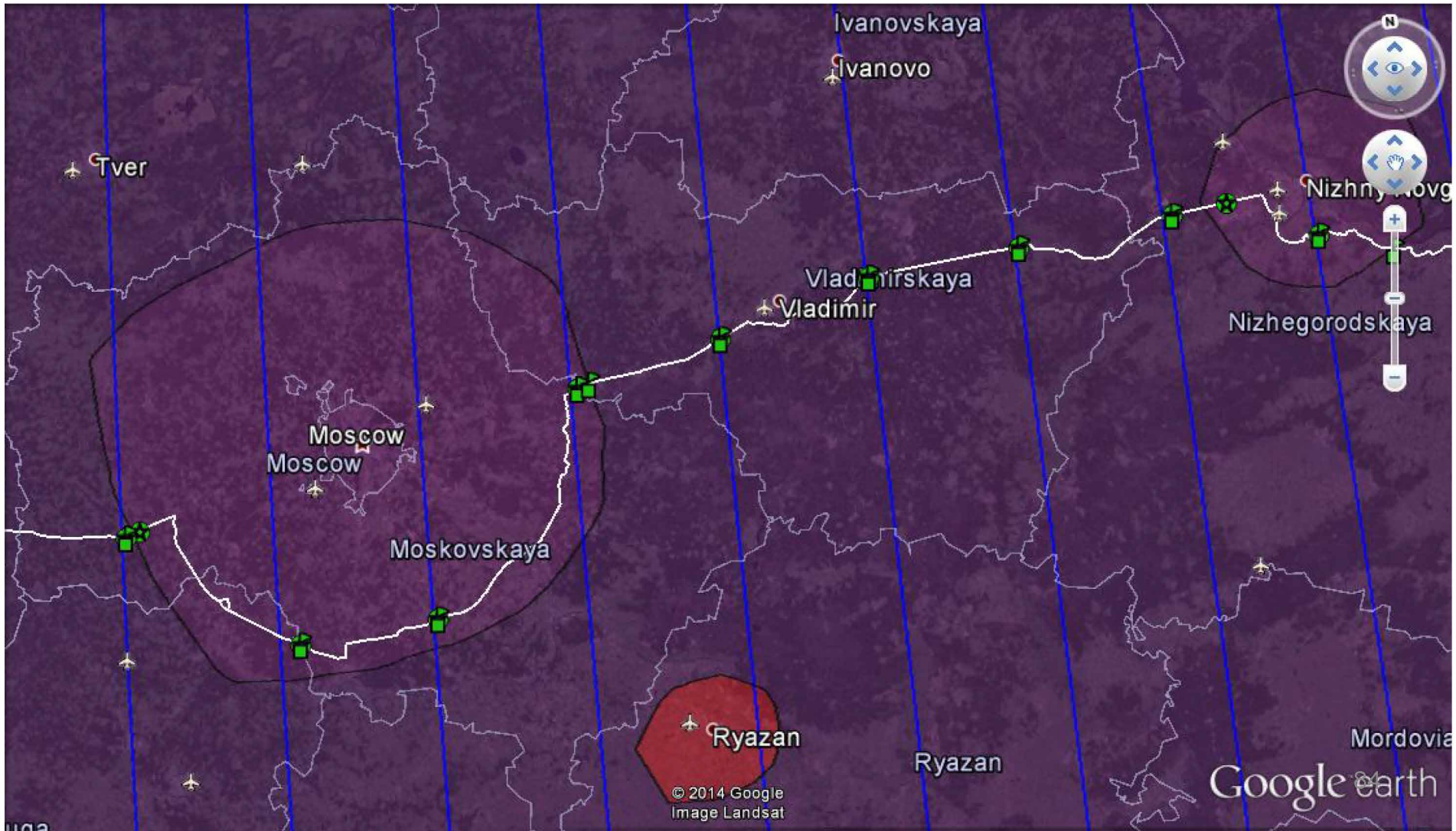
UNIZATRACK - Geofencing areas



UNIZATRACK – Geofenced data



UNIZATRACK – Geofenced data



UNIZATRACK Crash Alert

Unit H3228A has accident (crash) at 2014-08-14 04:45:28.0 mapa
Address: E71, 23450, Jasenice, Croatia

Weather	
observation_time	02:45 AM
weatherDesc	Clear
cloudcover	0
visibility	10
temp_C	20
humidity	83
pressure	1008
precipMM	0.0
winddir16Point	ESE
winddirDegree	120
windspeedKmph	9
weatherIconUrl	

Transport	
Transport ID	L03
From	2014-08-12 12:00:00.0
Adress start	Zilina
Till	----
Adress end	Split
UN codes	1263
Description	UN 1263 PAINT,3,III,(D/E) 350 drums (1A1), 16 pallets - 22500 kg

UNIZATRACK Rest Api Interface vs. monitorovanie prepravy výbušním v ČR

- https://transporty.policie.cz