

Possibilities of localization for vehicle security & monitoring

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GROUP

SHERLOG®

Security

SHERLOG®

Trace

SHERLOG®

Pipeline

SHERLOG®

eVito

- SHERLOG product series
- Czech Republic headquarters
- 60 000 active vehicle units worldwide
- Hardware & software development
- Manufacture
- Service providing

SINCE 1992

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In 20 years we implemented projects
on 4 continents in 21 countries



Stolen vehicle recovery

eCall

Fleet management

Possession security

Pipeline leakage detection

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Traffic information

GNSS tracing & tracking

RFID technologies

eHealth

Radio security

Persons & asset tracking

Vehicle telematics

Products review

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SHERLOG Security



- security „after theft“ system
- **radio based localization**
- comprehensive services
 - private infrastructure
 - call centre 24/7
 - mobile location devices
- more that 40.000 secured vehicles
- operation success > 98%
- www.sherlog.cz



SHERLOG Security



A screenshot of a GIS application window titled "Kokeš - data1_e.ref - [1:18276]". The window has a menu bar with options: Soubor, Pohled, Seznam, Výkres, Rastr, Výpočty, Aplikace, Nástroje, Okna, Help. Below the menu is a toolbar with icons for file operations, navigation, and analysis. The main map area shows a detailed street map of Prague, including districts like Staré Město, Vinohrady, and Žižkov. A red line represents a major road, and a blue line represents another road. A green label "Londýnská II" is placed on a street. A blue box with the text "20002 s12 14" is overlaid on the map. A small inset image of a radio tower is positioned on the left side of the map. The bottom of the window shows a status bar with the text "zmenšení obrázku (zmenšení měřítka) 2x" repeated twice, followed by "Co chceš ?". A scale bar for 1km is visible in the bottom right corner.

SHERLOG Pipeline

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Pipeline

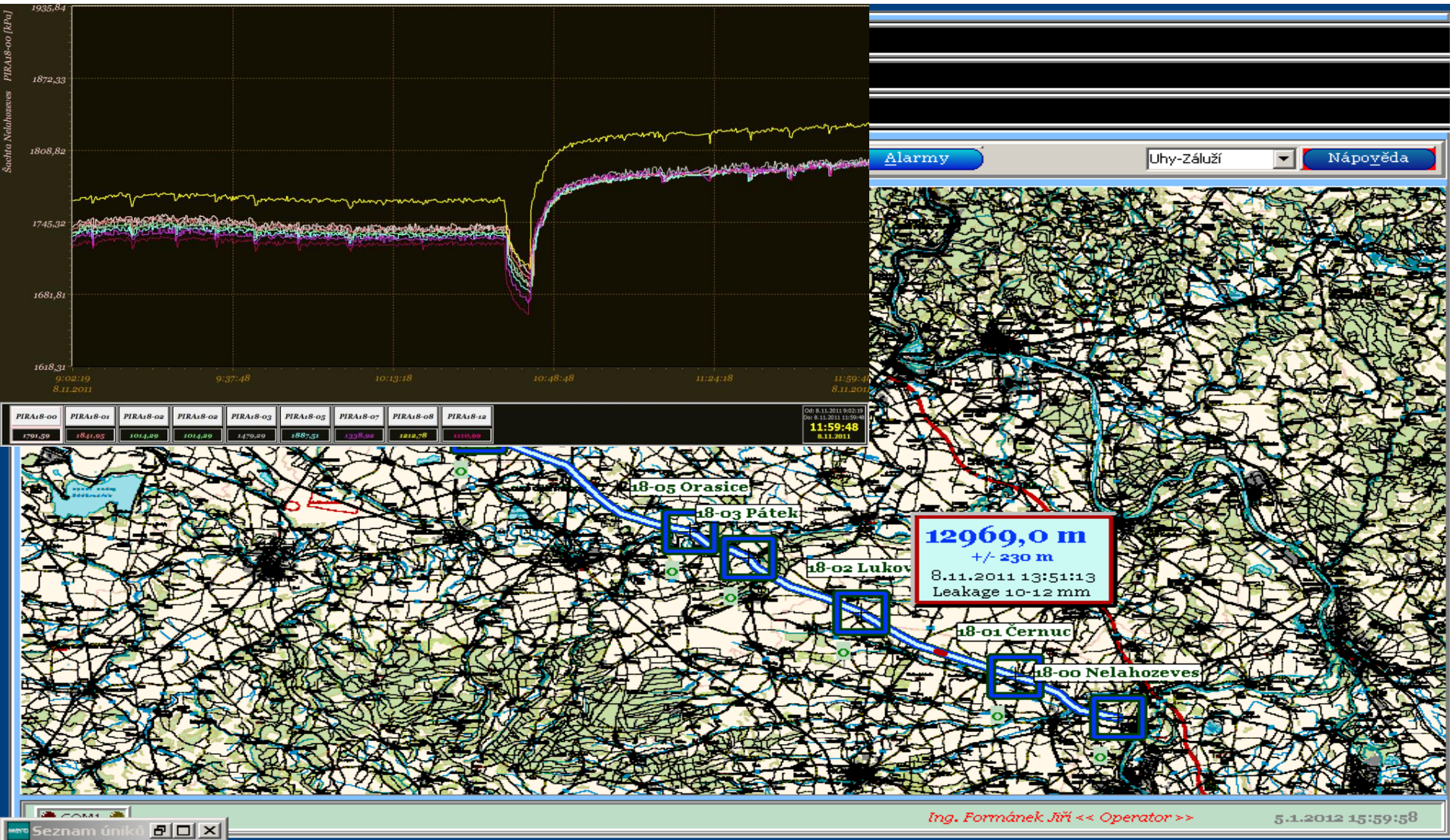
- Pipelines security monitoring system
- **GPS** & GSM/UMTS/RADIO/Sat based
- Comprehensive services
 - detects and **localizes leakage** of the pipe content (gas, liquid, mix)
 - detect defect from 3mm
 - localization in tens of meters
 - fast feedback – approx. 50s
 - complete service
- Implemented in 5 countries
- More than 2.500km monitored



SHERLOG Pipeline

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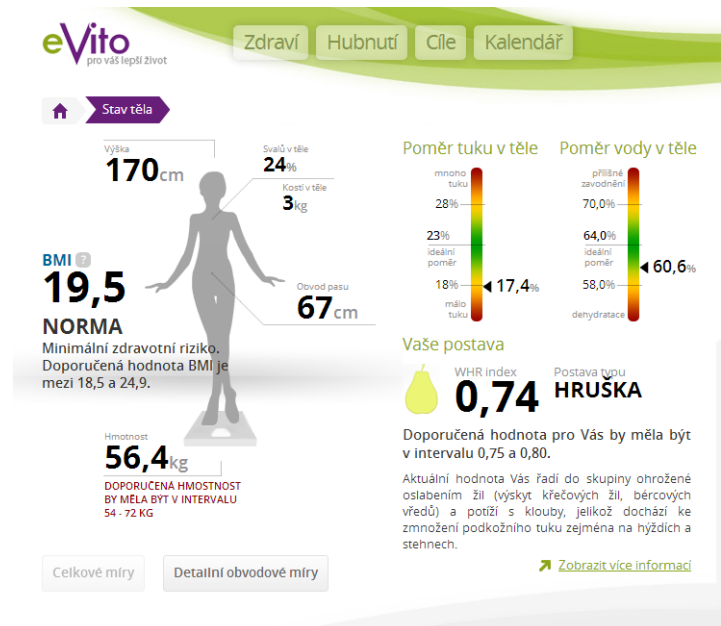
Pipeline



SHERLOG eVito

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- Universal telemedicine platform
- Monitoring system for physical and health parameters
- Comprehensive services
 - measuring equipment
 - web application
 - data transmission in real time
 - medically supported algorithms
 - complete service
- People **localization** (activities, movement)



SHERLOG eVito



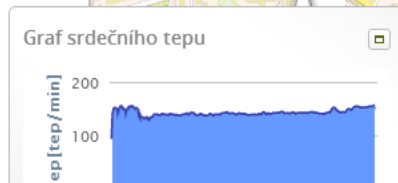
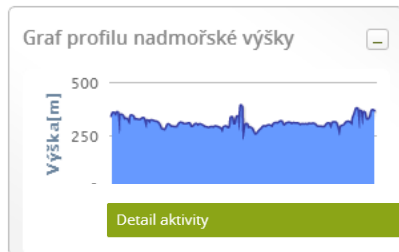
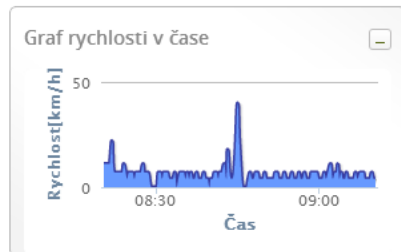
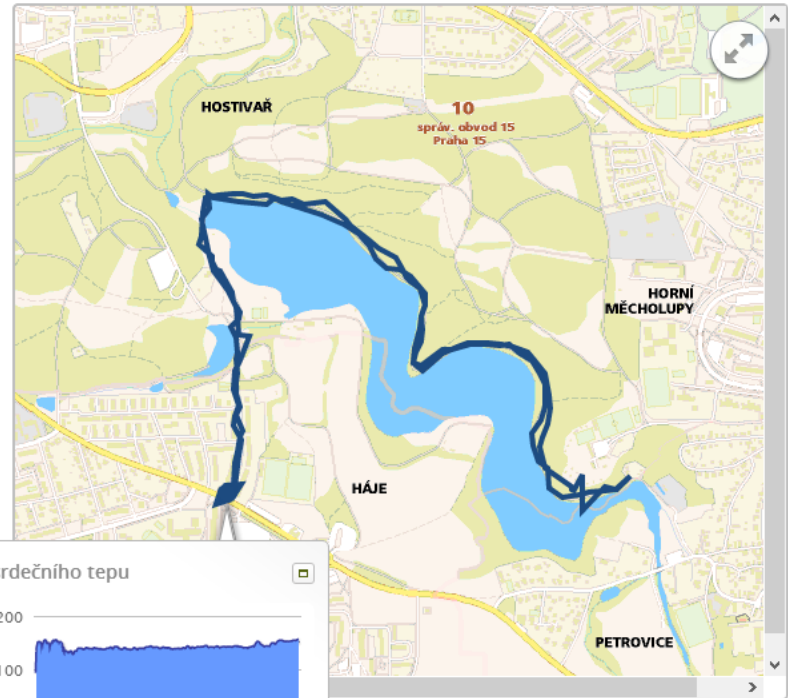
Detail aktivity

Běh (Android)

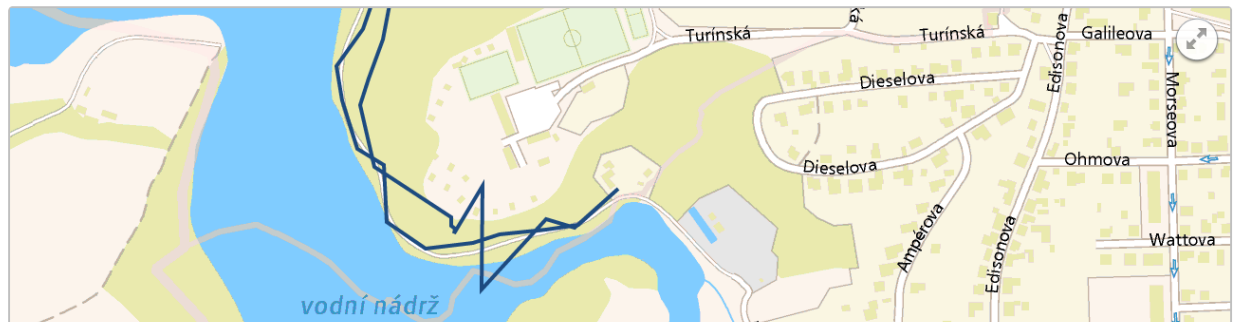
Poznámka



Výdej energie 3186 kJ	Vzdálenost 6231,00 m	Max. rychlost 39,1 km/h	Průměrná rychlost 7,4 km/h	Převýšení 164 metrů
Maximální tep 154 tepů	Počet okruhů -	Dosažení cíle -		



Detail aktivity



SHERLOG Trace



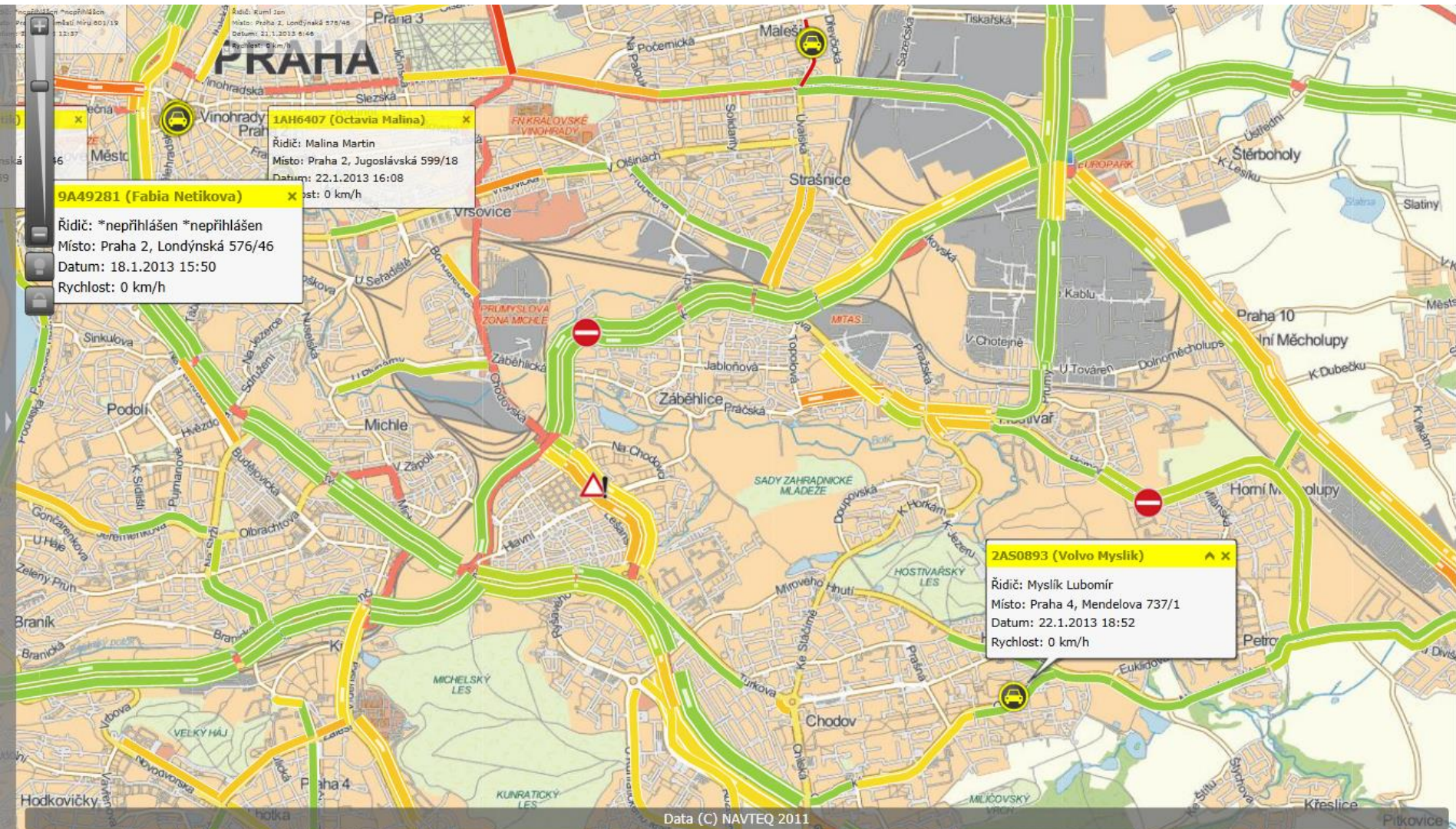
- tracing and tracking system
- **GPS (GNSS)** & GSM (UMTS, Tetra, radio, Sat) based
- comprehensive services
 - unit installation
 - data transmission in real time
 - web application
 - customization
 - complete service
- 7.500 clients
- 60.000 units



SHERLOG Trace

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Trace



Generally for all customers



CRITICAL POINTS

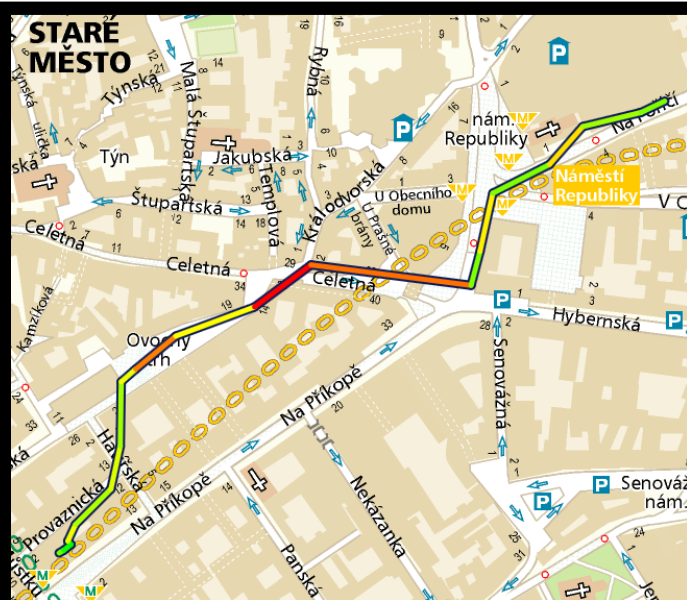
- Short 2-5 minutes / up to 2km journeys
- Routes in city centers
- Courtyards or in/out door ramps without or with bad GNSS coverage
- High accuracy in localization required
- Exact milage needed (pay per km)

PROBLEMS

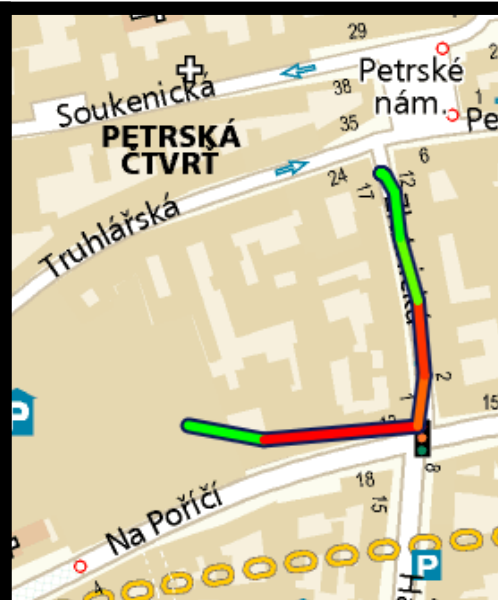
- > Long time to first fix (for short journeys)
- > Indoor movement (loss of GNSS signal)
- > Flyovers & inaccurate positions (multipath)
- > Parts of journey missing (milage doesn't fit)

Short routes in cities

consequent journeys



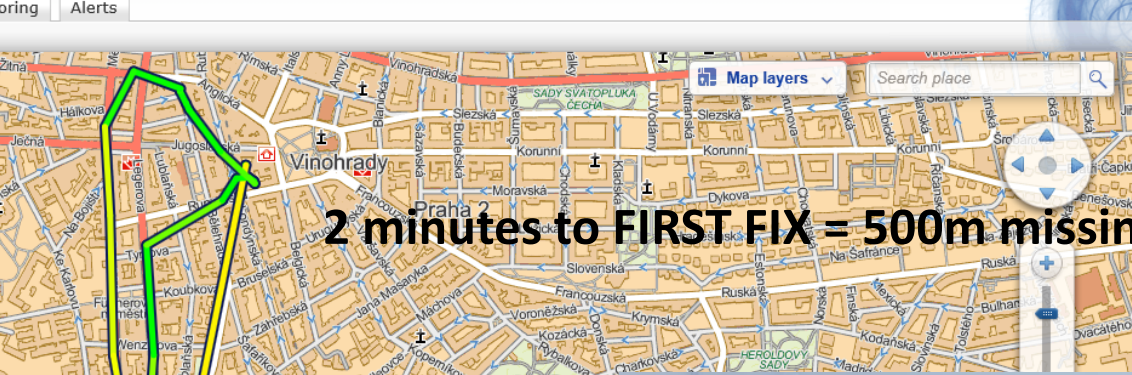
4 min. / 1.1km



3 min. / 0.1km



1 min. / 0.3km



2 minutes to FIRST FIX = 500m missing



Position	Praha 4, 5. května 1670
Length	1 km
Time	16:30
Speed	49 km/h
Trace duration	09:33
Driver	Malina Martin

SHERLOG trace

Vehicles Reports Exports Admin Track Monitoring Alerts

» Log book Expenses Overview

Select unit Position info

PRAHA

Praha 2, Jugoslávská 599/18

Date 22.1.2013

Time 16:08:17

Speed

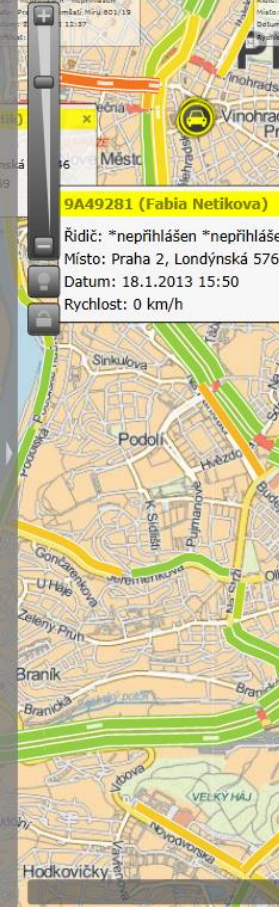
Driver Malina Martin

Vinohrady REAL POSITION

Other cases



- **Personal tracking**
 - in/out door tracking combination is necessary
 - **GPS can't be used**
- **Planes**
 - crucial parameters: velocity & altitude
 - **GPS can't be used**



Solutions



Solution 1: MULTI GNSS

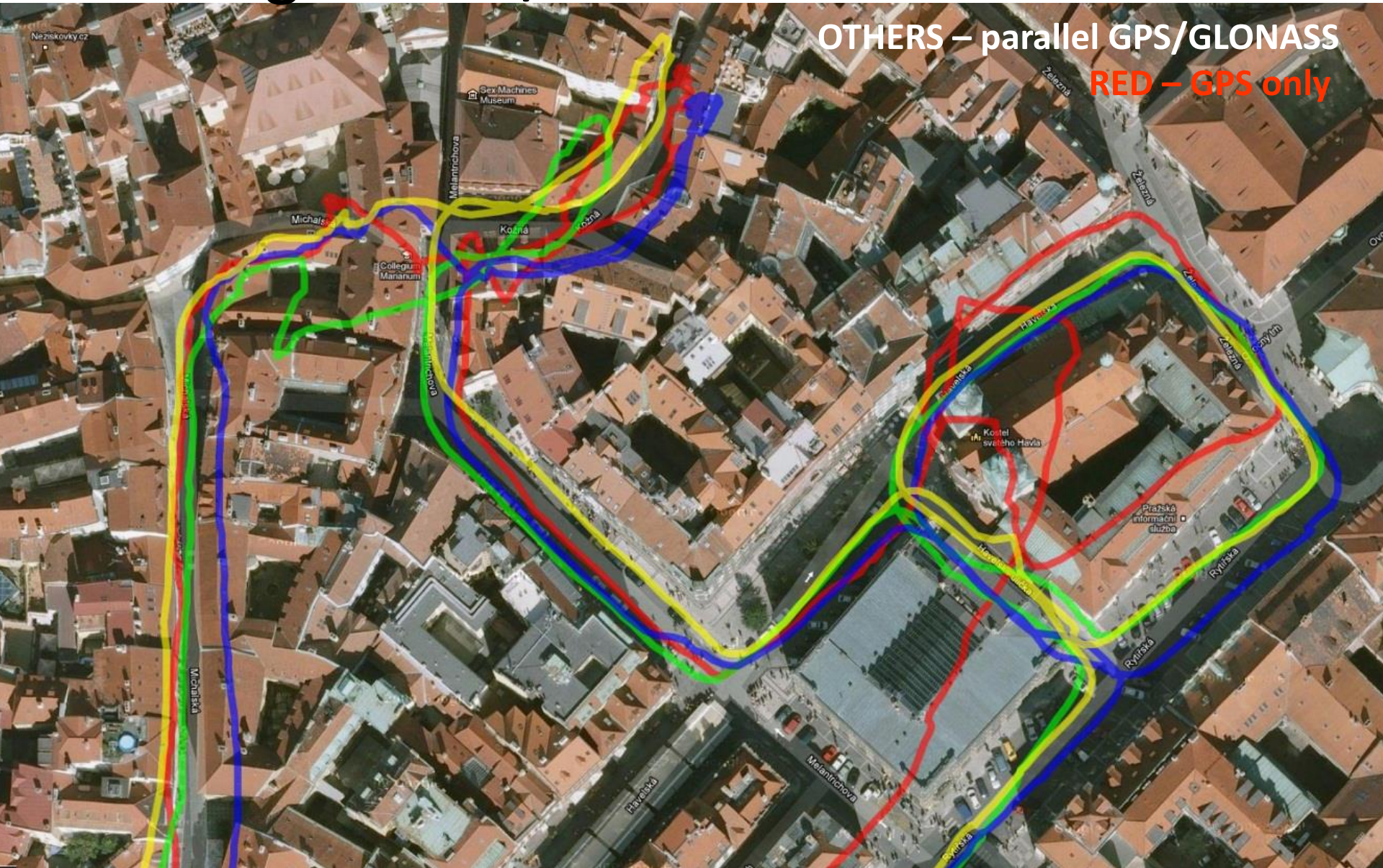
Solution 2: DEAD RECKONING

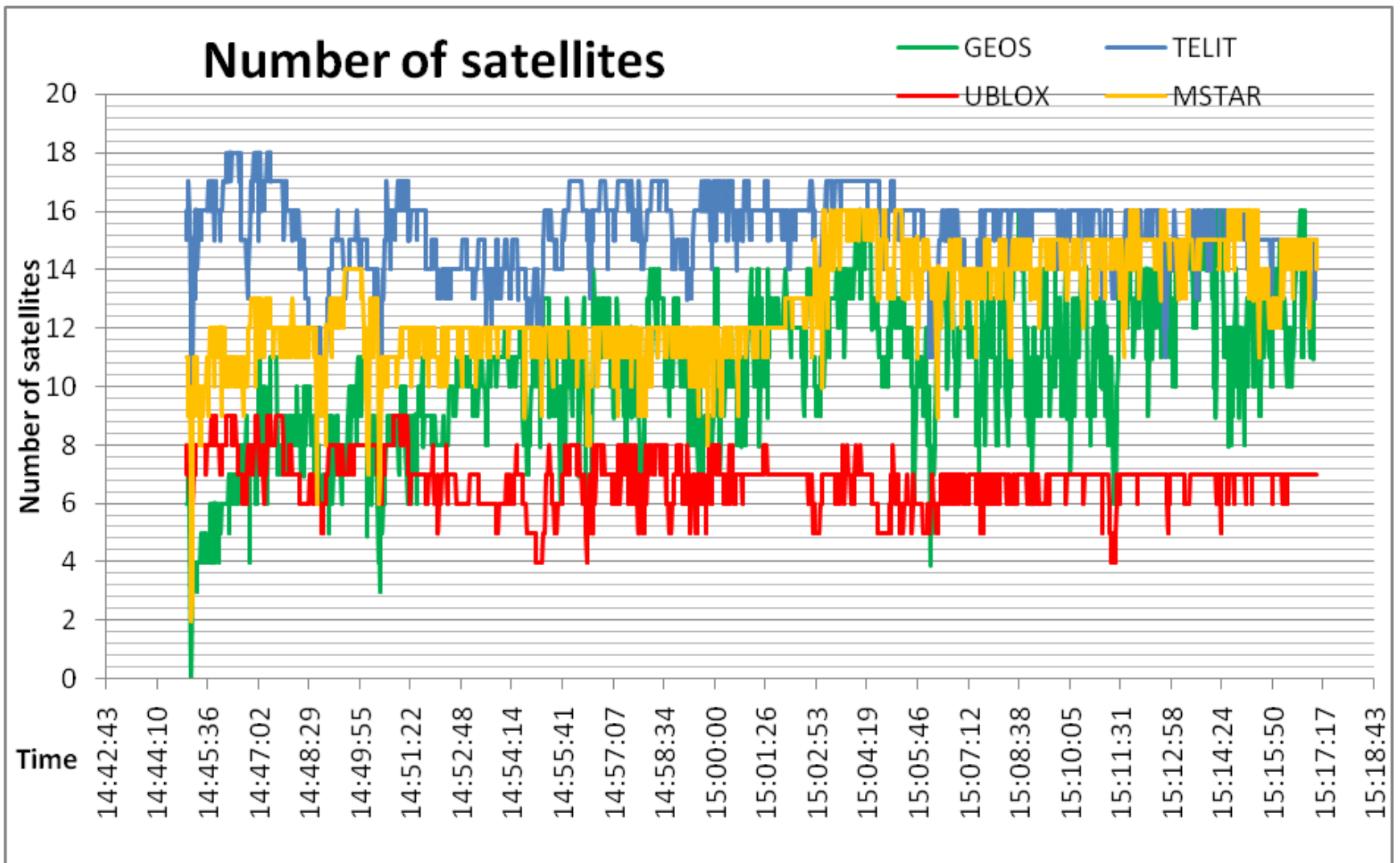
Solution 3: BACK-OFFICE COMPUTATION

Etc.

1. Multi GNSS

Testing of GPS/GLONASS receivers





RED – GPS only

OTHERS – parallel GPS/GLONASS

Multi GNSS

- GPS only solution brings a desired accuracy in most of applications
- Multi GNSS:
 - > brings an enhance accuracy in limited sky view,
 - > receivers show significantly higher HDOP in all tested environments
 - > could bring a better TTFF
 - > receivers parameters varies among manufacturers



Thanks for your attention

www.sherlog.com

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Problems of other solutions

- 2: Dead reckoning problems
 - cumulative error
 - gyro + accelerometer & precise calibration needed
 - suitable only for short journeys (max. hundreds of meters)
- 3: Back-office computation problems
 - tricky algorithms
 - do not work online