



# *A-GLONASS application practice*

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# Main problem's sources for quick and exact positioning on GNS

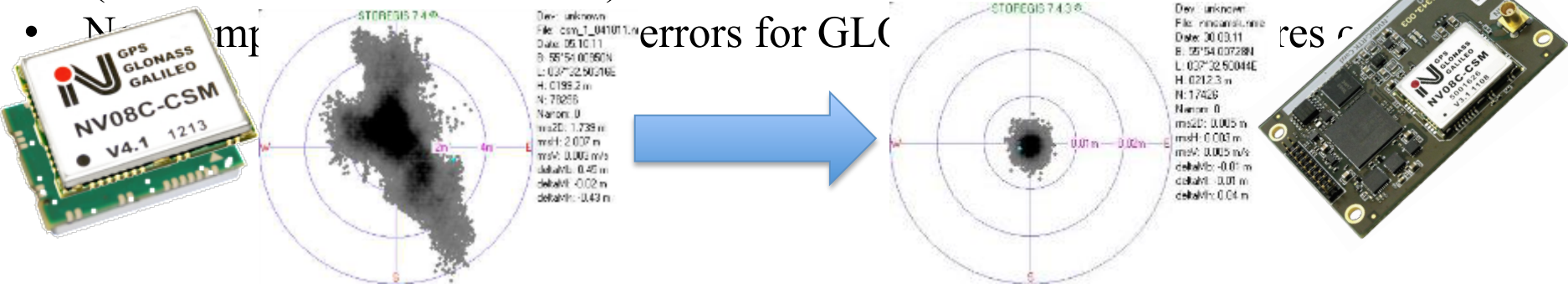


*Main problems for quick determination of the object location:*

- Low GNSS signal level at the time of start of the equipment (conditions of measurements)
- Limited number of "visible" satellites (conditions of measurements)
- Time for allocation of navigation information from a satellite board of 30 seconds (features of system creation)

*Main problems of exact determination of the object location:*

- Mistakes due to ephemeris and time providing (control segment)
- Signal ionosphere and troposphere delays (distribution environment)
- Multipath errors – reception of the reflected signals (conditions of measurements)
- Radio noise from sending devices of space and land infrastructure (conditions of measurements)



# Methods of solving problems for quick and accurate positioning on GNSS

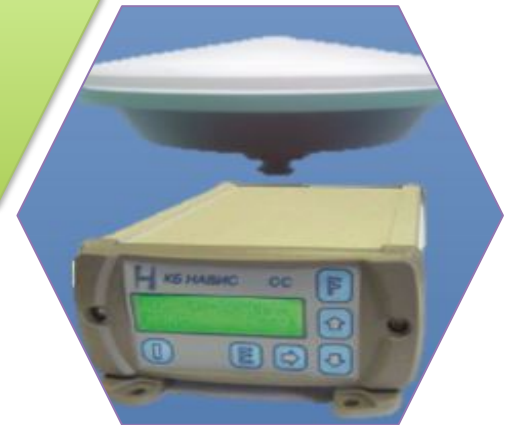


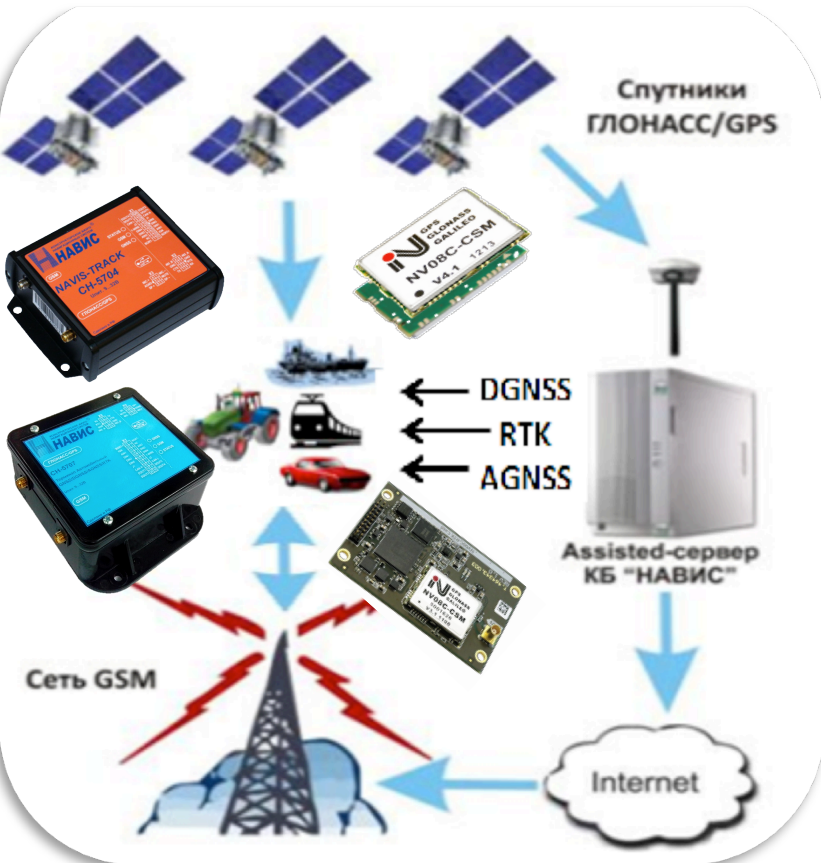
Assisted



SBAS/  
DGNSS

RTK





## Transfer of additional information

## Improving the reliability of work:

### **Assisted GNSS – TTFF (5 s)**

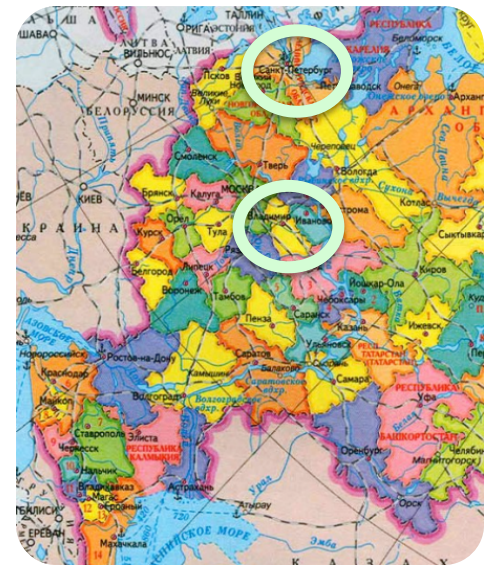
- To reduce the time to first fix valid coordinates (TTFF)
- To increase the sensitivity of reception of the weak signals in "dead zones»:
  - tunnels,
  - the lowlands,
  - hollows,
  - on narrow city streets

## Improving the accuracy of navigation

**SBAS (0.7 m)** – wide area differential correction

**DGNSS (0.5 m)** – local differential correction

**RTK (0.01... 0.02 m)** – relative navigation





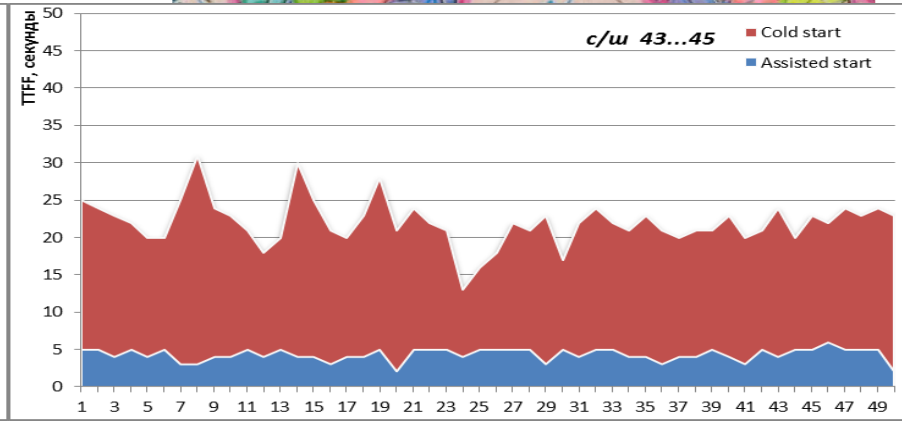
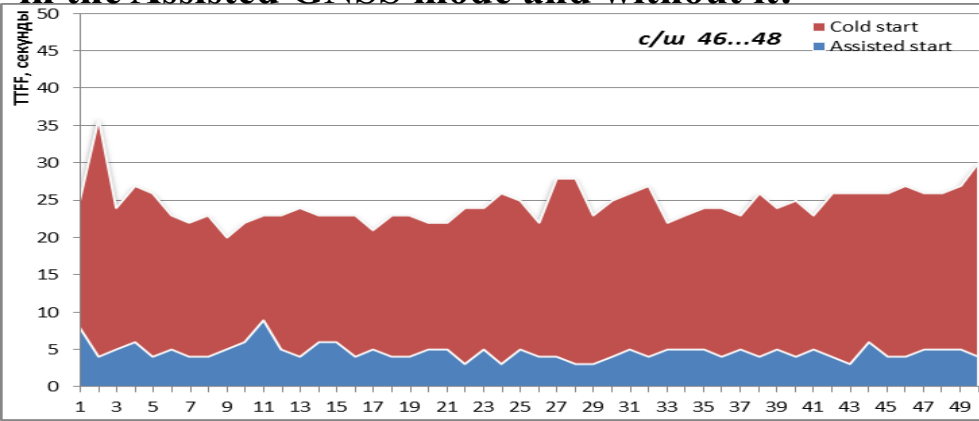
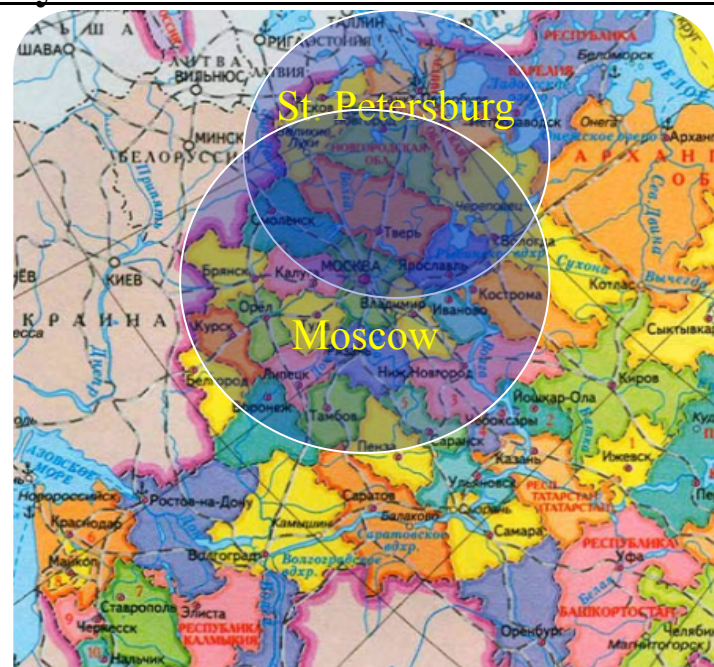
## The use of Assisted GNSS allows you:

- To reduce the time to output the first valid coordinates (TTFF) is **< 5 seconds (in standard mode 25 seconds)**
- To increase the sensitivity of the receiver  
A-GNSS (up to 30dB)

In terminals SN-5707 and SN-5704 implemented and tested modes ASSISTED ONLINE и ASSISTED OFFLINE

The TTFF measurements at different relations Noise\Signal in the Assisted GNSS mode and without it:

## Layout of stations to A-GNSS mode:





**Thank you for your attention!**

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