



**International Committee on GNSS
(ICG-14)
Working Group S**

IDM Subgroup

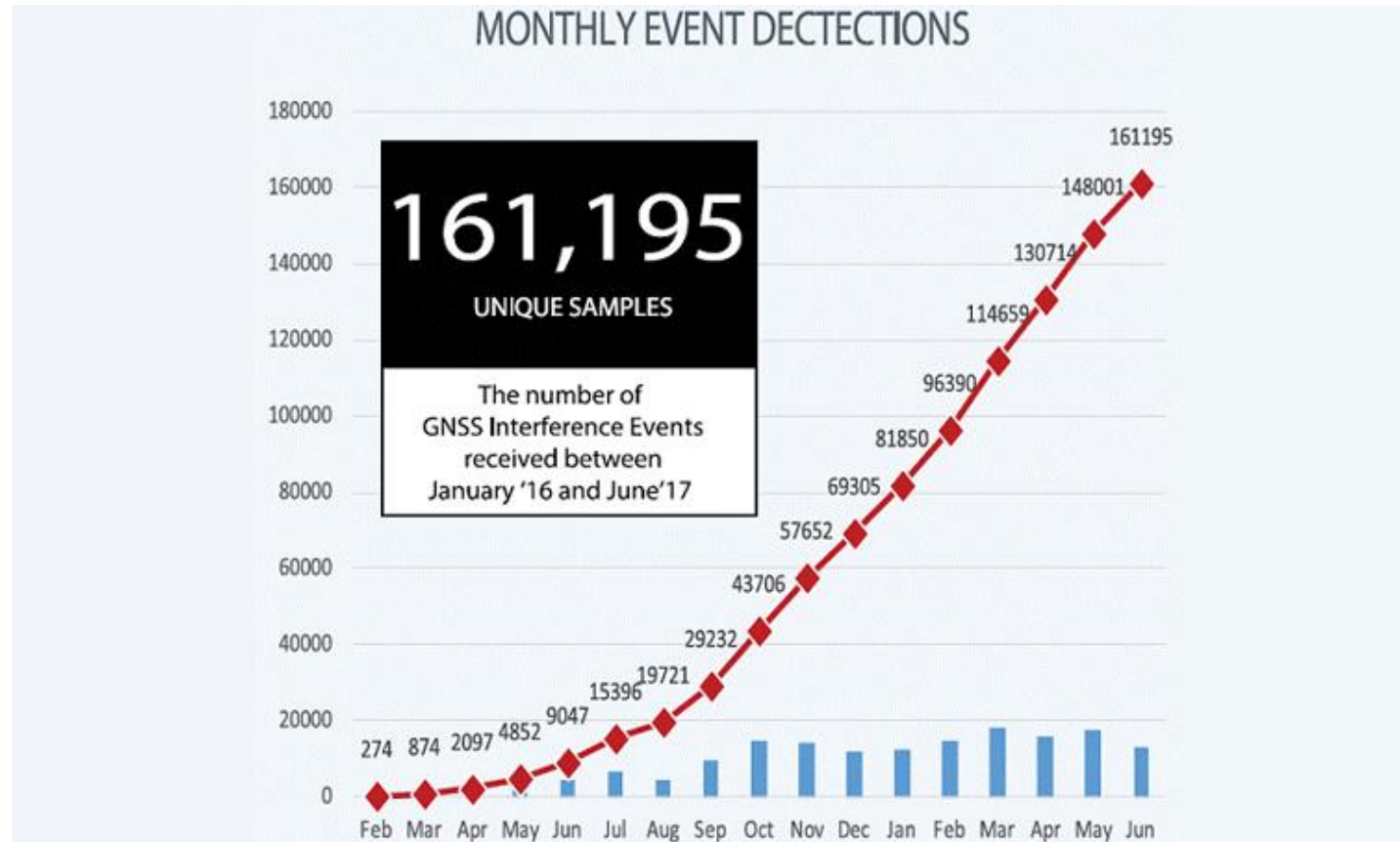
**New steps in the navigation conditions
monitoring project**

**8-13 December 2019
Bangalore, India**

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Alexey Muravyev*

Incidents with GNSS

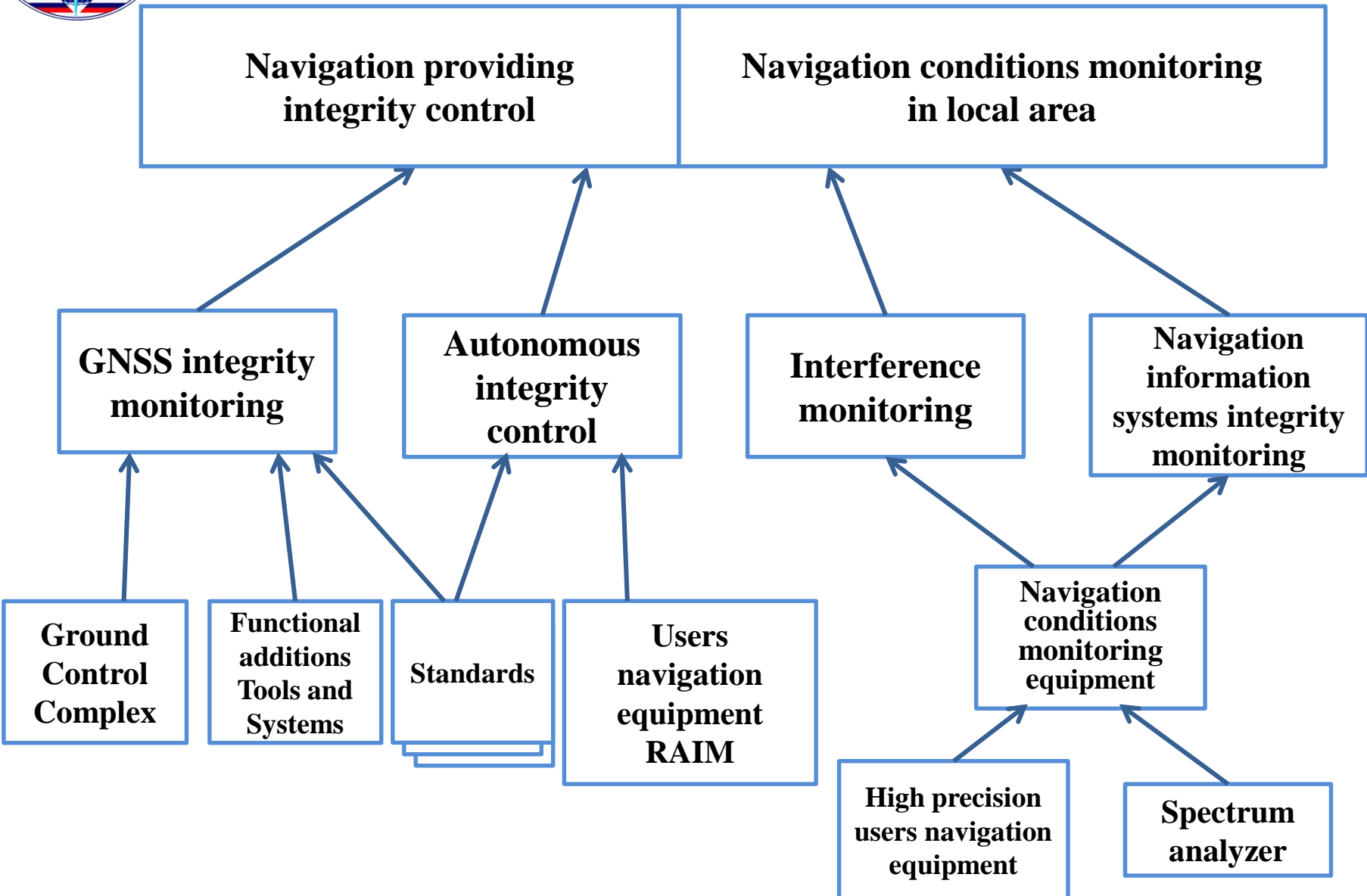
(According to the European Agency data)



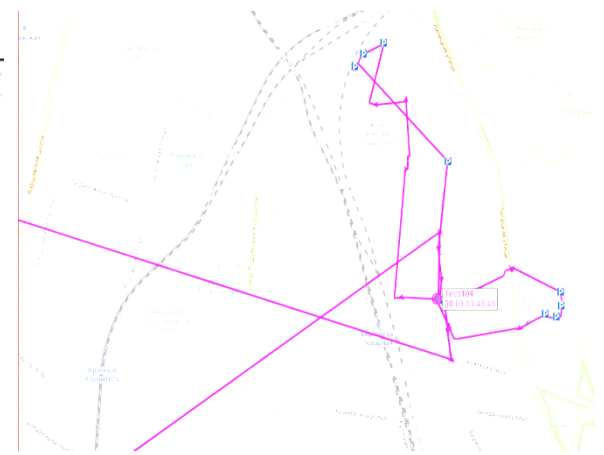
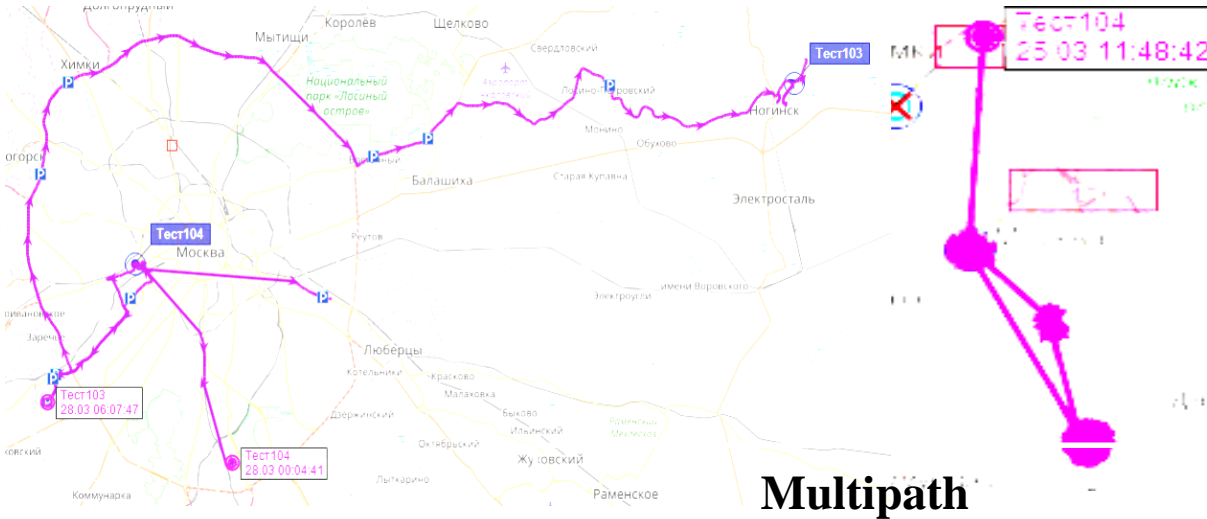
Routes of monitoring

(German Aerospace Center (DLR) data)





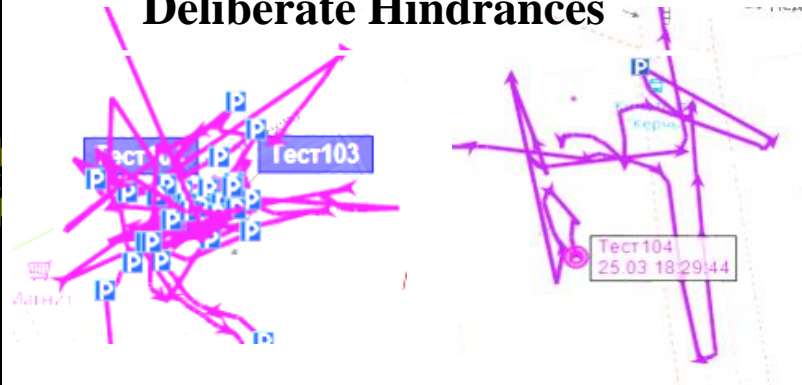
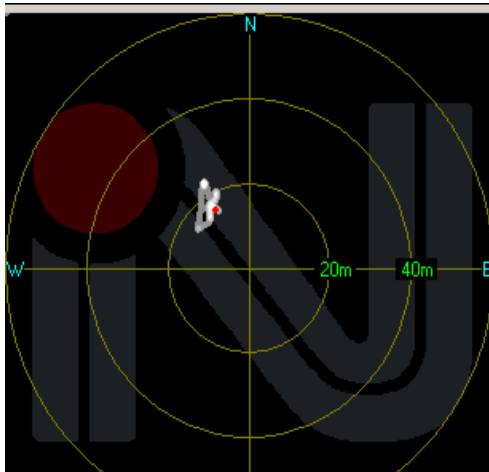
Test Results



Multipath

?

- Inadvertent Hindrances
- Satellite Navigation Equipment Problems
- Satellite Navigation Equipment Settings
- Deliberate Hindrances



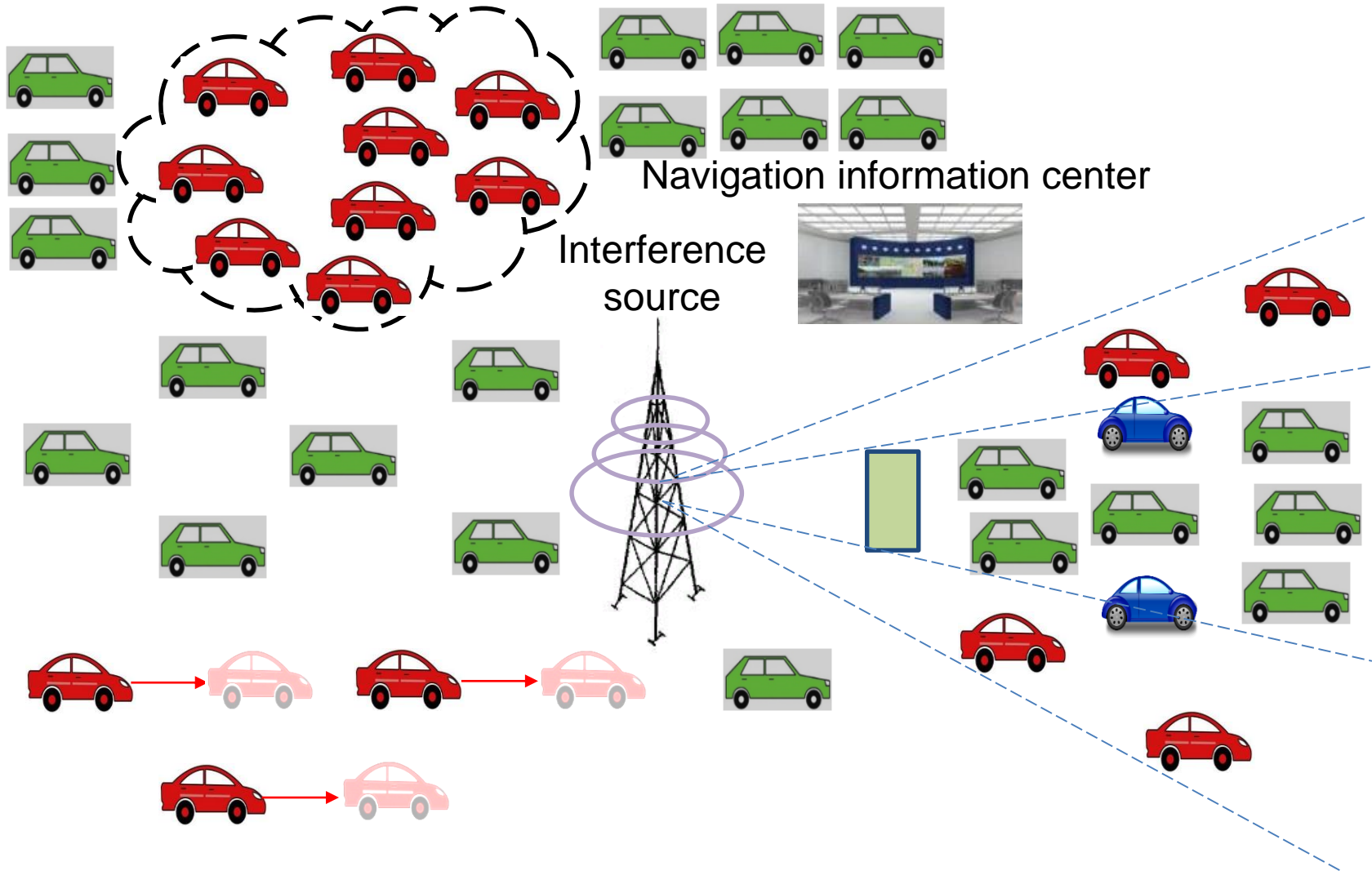


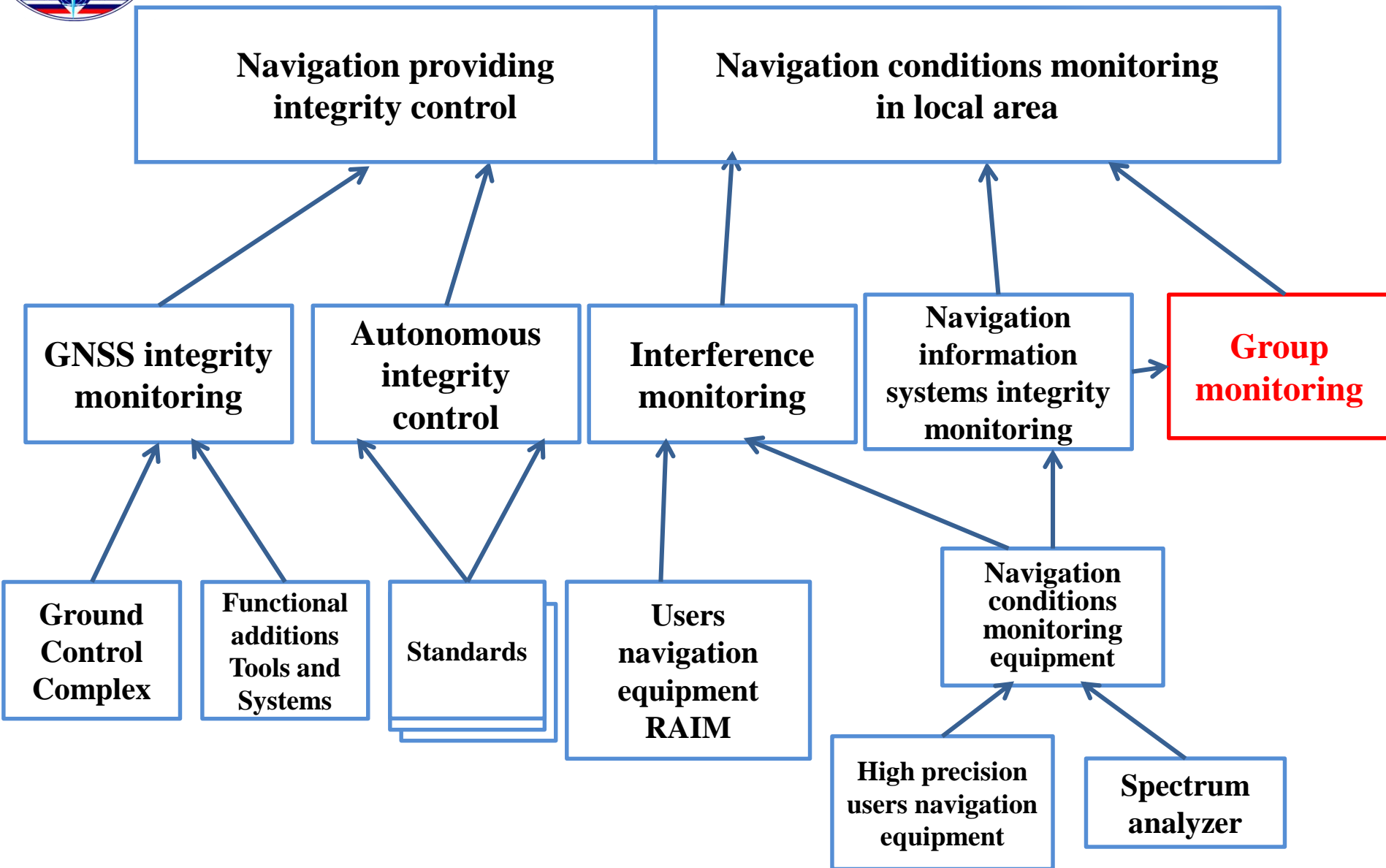
Navigation conditions monitoring problems

- Influences and events classification
- Criteria for assessment and identification of influences and events
- Techniques for assessment and identification of influences and events



Navigation conditions monitoring in navigation information systems







Conclusions

1. Issues of ensuring high operational reliability of navigation support, including integration of heterogeneous navigation aids and monitoring of navigation conditions, are relevant tasks.
2. Along with inertial navigation, radio navigation, and classical odometry, directions such as video navigation and physical field navigation are considered as the most promising by many researchers.
3. During 2019 deals we propose to use navigation and information systems (NIS) for monitoring of navigation conditions in responsible areas.
4. Within frameworks of the current activities of the Federal Target Program (FTP) GLONASS for 2019-2020, scientific research is planned to form a methodological apparatus for assessing navigation conditions based on the analysis of group effects in the navigation and information systems .

Conclusions (2)

5. It seems advisable to organize planning and implementation of measures to develop promising navigation monitoring technologies in the pilot zone.
6. Research on methodological support for NIS monitoring is planned in the activities for the development of the GLONASS system.
7. The first results of the research were discussed at the meeting of the working group of the UN Committee on GNSS in 2018, at the international GLONASS/GNSS Forum in 2019 and at Russian scientific conferences.
8. Proposals on the organization of the international system for monitoring navigation conditions are actively discussed in the ICG working group.
9. Proposals for the organization of the international project are being prepared.



Thank you for attention!