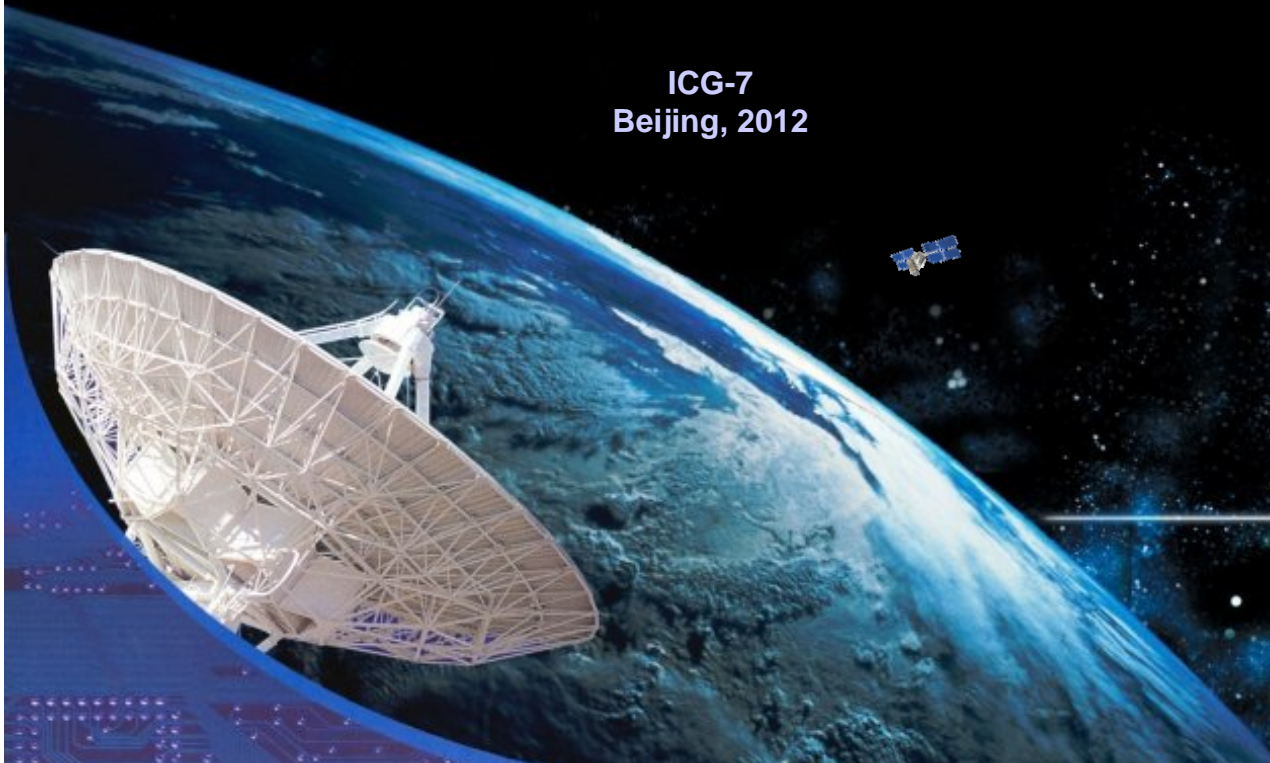




Proposed role of Russian Education Centre in constituted world GNSS centers network

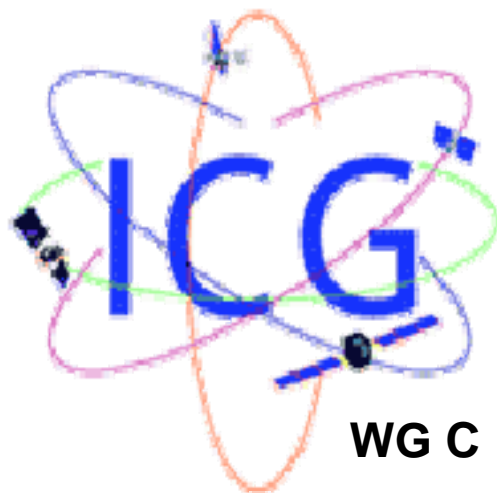
ICG-7
Beijing, 2012

Pavel Kazakov
Russian Space Systems , JSC





Russian Education Center GLONASS performs the tasks of WG C



Additional learning and training of specialists from different countries

Information dissemination on GNSS and its applications

Proposals of GLONASS Learning Centre are taken into account by ICG in 2009, 2010, 2011.





Learning concept



Cross-university System of Distant Learning



learning

courses

GNSS state and development

GNSS Applications

Management of GNSS technologies

More than 1000 h. of theoretical and practical training
More than 200 h. of laboratory works
25 learning modules
6 multimedia facilities

consumers



**CONSTRUCTION,
MONITORING OF ENGINEERING
STRUCTURES**



TRANSPORTATIONS



AGRICULTURE



GEODESY

Learning System is developed and supported by Roscosmos



Cooperation with universities





Modules of Distant Learning System



GNSS history, principles and structure, projects

Methods, navigation signals, data transmission protocols

Differential systems, integrity, control methods

Consumer equipment, particularly the implementation of real-time measurements, communications

Coordinate-time operation of the GNSS

Construction of geodesic networks and special-purpose

Global, regional and local geodynamics

Organization of field work in cadastral surveys, geodetic software inventory

Geodetic work in land management

GNSS use in the underground work and work carried out in quarries

The use of GNSS in rail and road transport

Use of satellite navigation equipment in intelligent transportation systems

GNSS applications in modern on-board navigation systems

GNSS applications to improve safety, productivity and quality of transport

Creation of digital navigation maps

The introduction of ICAO CNS / ATM in civil aviation

The use of GNSS for geodetic support the construction and operation of aerodromes

The use of GNSS to control unmanned aerial vehicles

GLONASS/GNSS-oriented technologies (ADS, TAWS, TCAS, RVSM)

GLONASS/GNSS equipment in avionics

The use of GNSS to perform tasks in building and managing construction machinery

Monitoring of the deformations of engineering structures

Use of GNSS in laying pipelines, taking the bottom topography and underground utilities

Goniometric navigation equipment for operational control during construction and operation

GNSS applications in the mining industry





Multimedia facilities of GLONASS Learning Center



**Popularization
Distant learning**



Availability from any computer, gadget

Near-realtime monitoring of satellite constellation

Universal multimedia platform

Multimedia is highly perspective in specialists learning



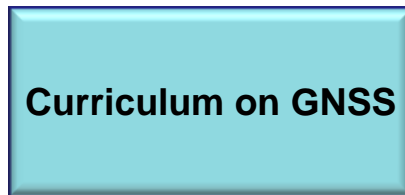
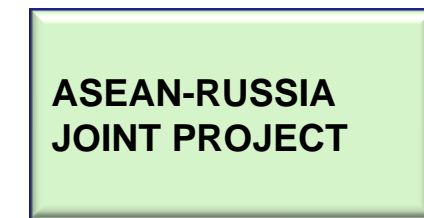
Proposals for International Learning



experts



Access, realization





International School on Satellite Navigation



Additional learning in basics of satellite navigation, its perspectives and applications

Students: specialists of organizations with use GNSS



2011: Course «Satellite navigation technologies and its applications»
30 students

2012: Course «Practical use of integrated GNSS and Remote Sensing data»,
56 students



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Summary: proposals for the WG C recommendations



Support the cooperation of learning centers of different countries (UN-affiliated and independent) due to develop and fulfill the learning courses and facilities

Recommend to leading universities with take initiatives in international education, to cooperate with ICG assistance due to provide consumers of different countries equal opportunities in access to learning courses, tools and facilities, as well as relevant information on GNSS technologies and its applications

Activate the work under the Curriculum on GNSS with coordination of WG C



**Thank you
for your attention!**

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