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**Organizing the cooperation of  
Russian Education Center  
with the United Nations – affiliated  
Regional Centers for Space Science  
and Technology Education**

ICG-5  
Turin, Italy, 19 October 2010

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Inna Brindikova  
Russian Space Systems**





## Russian Education Center



Russian Education Center is created as the element of International Innovation Center of Space and Navigation Technologies and Systems,  
**JSC "Russian Space Systems"**

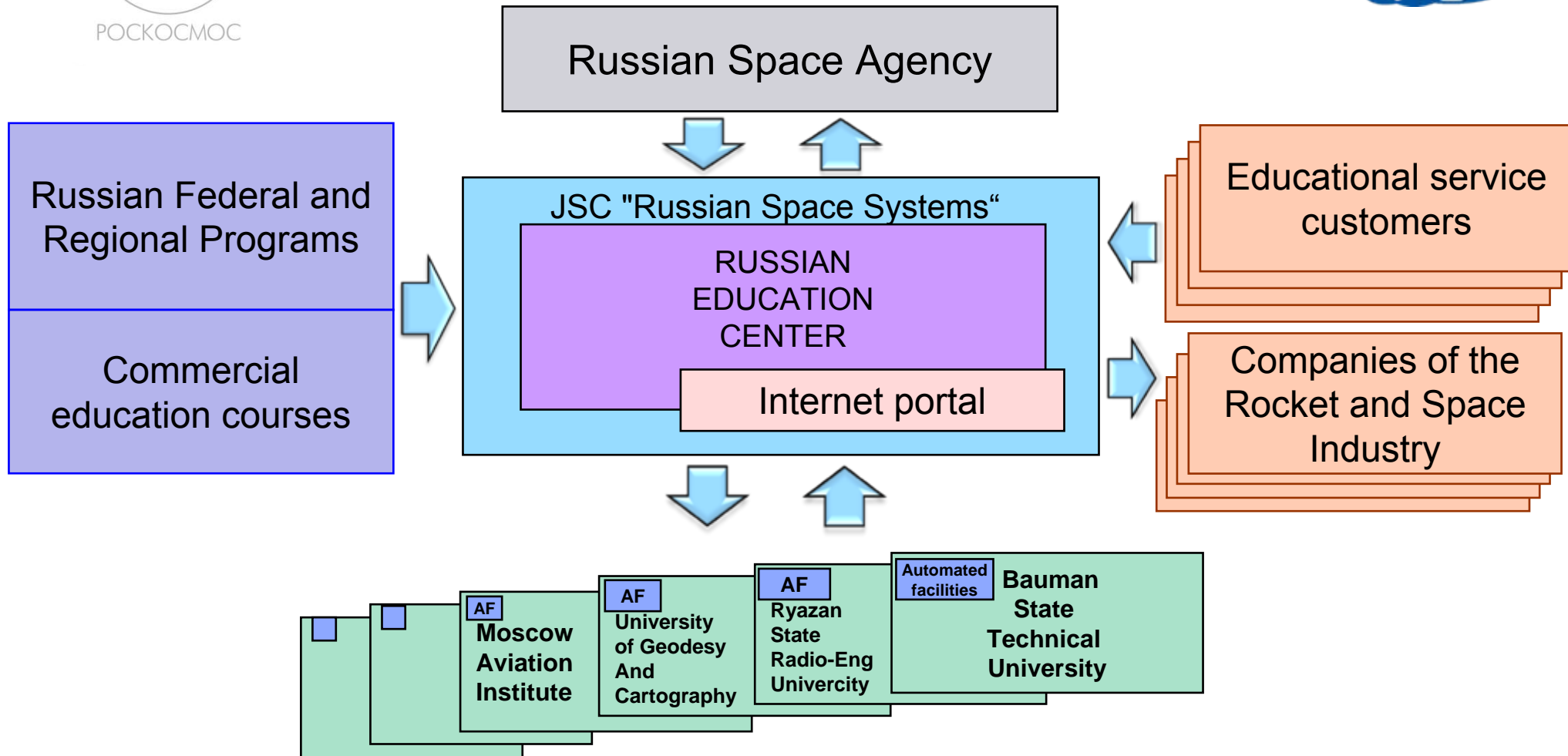


Objectives: additional learning and training of specialists in GNSS applications, including GLONASS



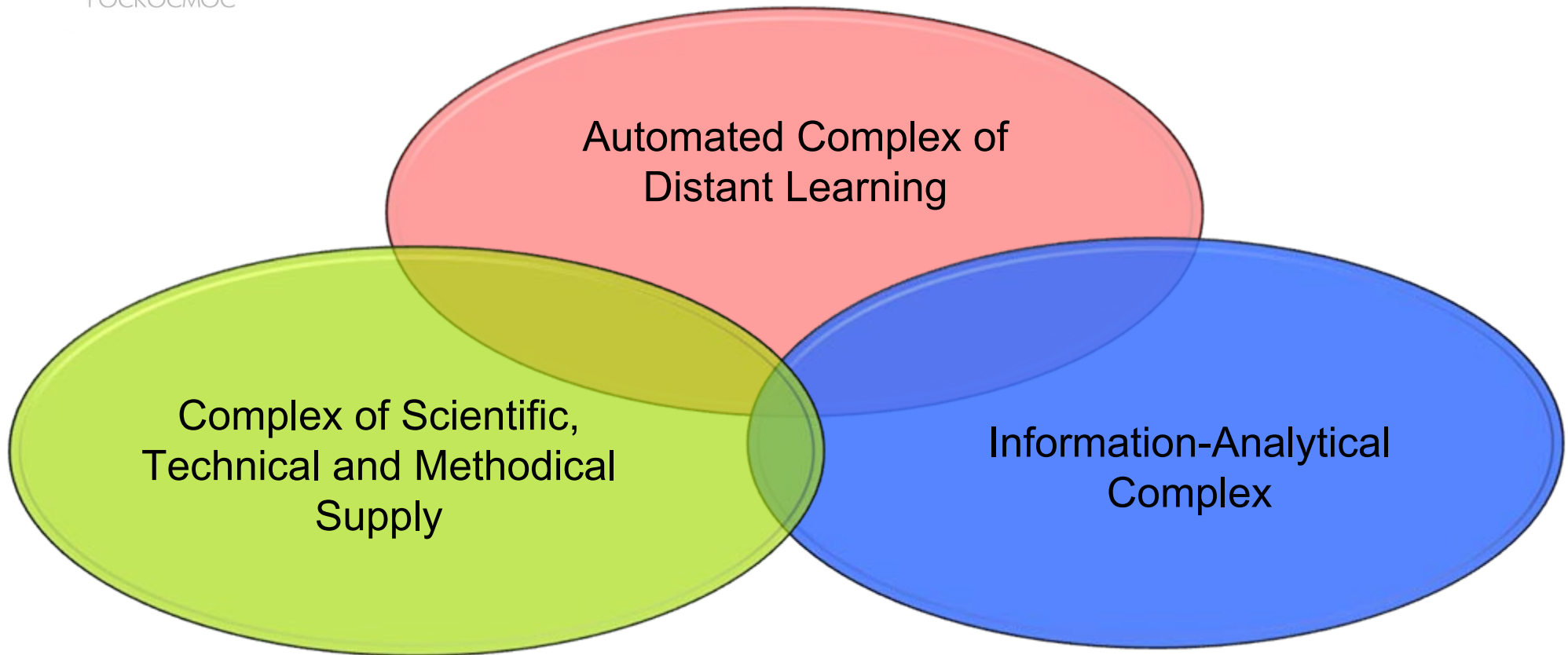


# Organization Chart of Russian Education Center



**Distant Learning** will be the main learning form in Russian Educational Center, respecting to the recommendations of ICG-4, September 2009





The Distant Learning System facilities are developed now in JSC "Russian Space Systems" commissioned by Roscosmos

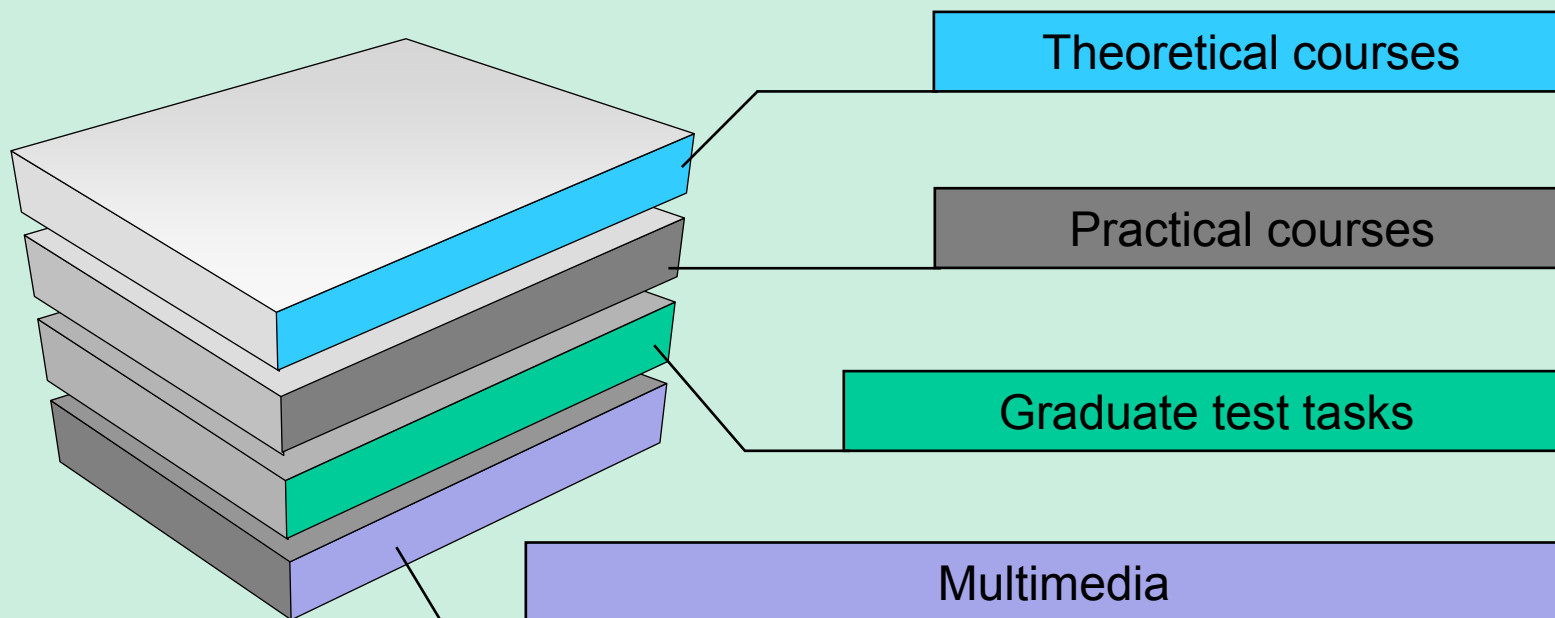


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## Structure of Learning-methodical complex



### Learning-methodical complex






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# Learning Programs



- More than 1000 h. of theoretical and practical training
- More than 200 h. of laboratory works

**To the end of 2011**



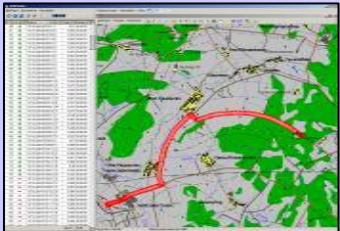
**CONSTRUCTION,  
MONITORING OF ENGINEERING  
STRUCTURES**



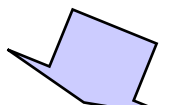
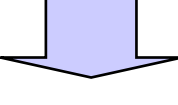
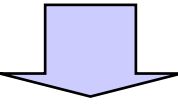
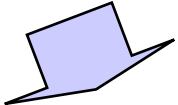
**TRANSPORTATIONS**



**CIVIL  
AVIATION**



**GEODESY**



**LEARNING CONCEPTS**


- Status and development of GNSS
- GNSS applications
- SNS management



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## Status and development of 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



## GNSS in geodesy, cadastre and land management



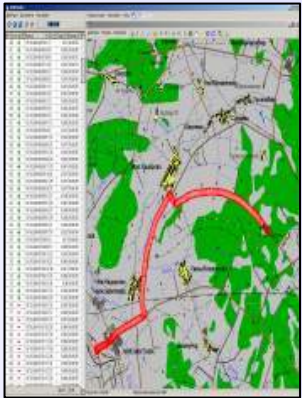
Construction of geodesic networks and special-purpose

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







## GNSS in transportations

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





## GNSS applications in civil aviation

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





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# Construction and monitoring of engineering structures

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

**Developed educational tools can be a basis for the organization of international cooperation**



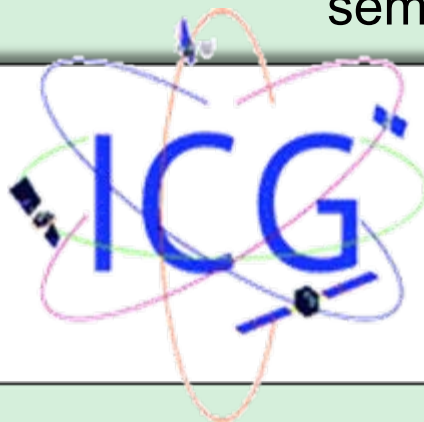


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## Main forms of cooperation with the UN-affiliated Regional Centers for Space Science and Technology Education



Organization of international conferences, courses,  
seminars, workshops, schools



ICG meetings



Distant cooperation via the ICG portal



Wide geographic spread of the target audience

Practical orientation of training

Always actual training courses,  
considering the international information exchange

Continuity and flexible learning

Constant monitoring of the knowledge and skills obtained





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## Organizing the cooperation



### OFFER:

Organize the distant cooperation of Russian Education Center with UN – affiliated Regional Centers

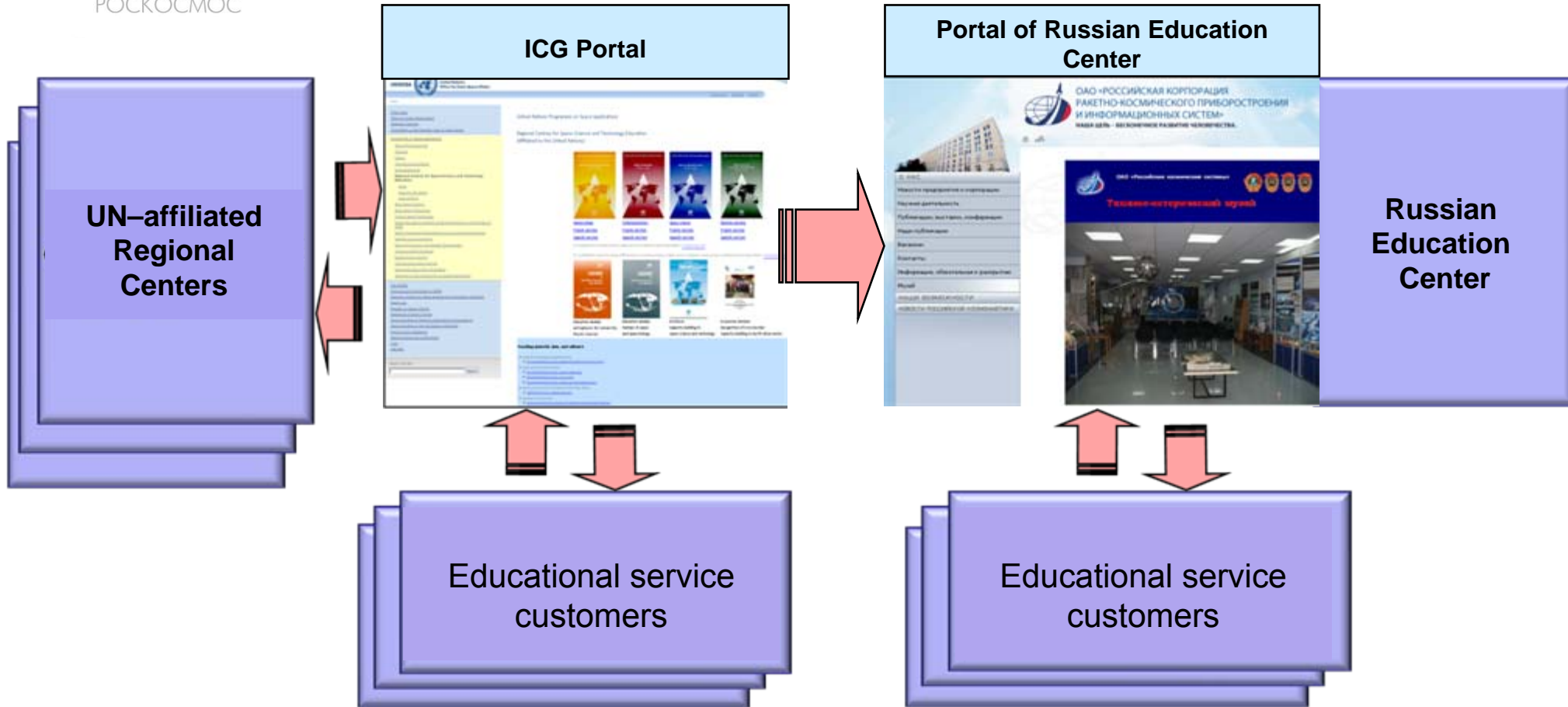
### Motivation:

to spread the information on GNSS systems (GPS, GLONASS, GALILEO and others) more effectively

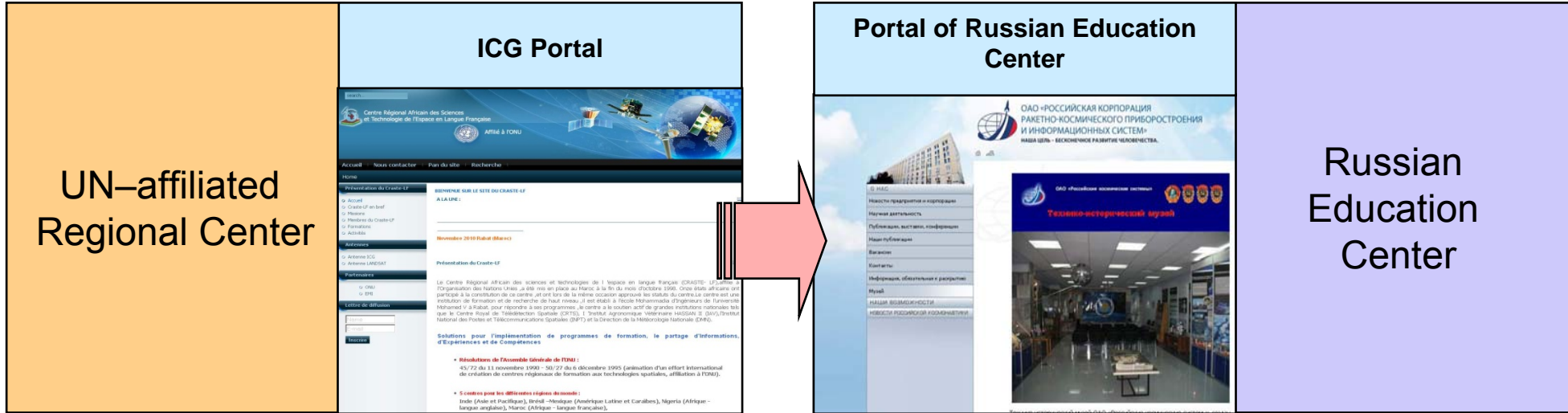
### Tasks of the Russian Education Center:

- establish long-term cooperation with UN – affiliated Regional Centers;
- promote GLONASS;
- examine the demand of the world market for the GNSS services.

## Organization scheme of possible cooperation way



To clarify the interest of UN-affiliated Regional Centers and clarify the technical capacity we propose to perform a pilot cooperation with the Russian training center in 2011



Curriculum structure and way of access to it on Russian Education Center portal will be designed respecting to the recommendations of the ICG



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## Conclusion



Russian Education Center, supported by Russian Space Agency,  
develops the distant learning system actively

It is offered to organize the distant cooperation of Russian Education Center  
with UN – affiliated Regional Centers

Russian educational tools can be used in the development of the  
UN – affiliated Regional Centers curriculum

**Successful use of the distant technologies will enhance  
international cooperation in learning and dissemination  
of information on GNSS**



**Thank you for your attention!**