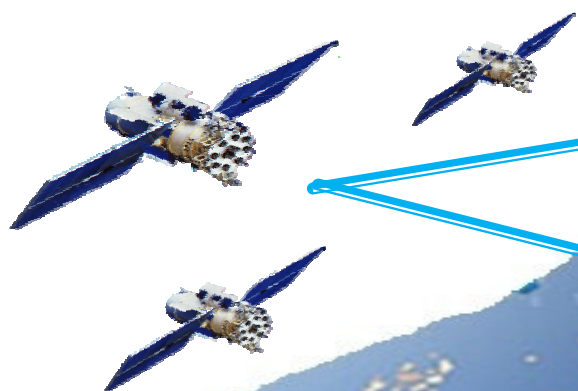




National Space Agency of the Republic of Kazakhstan

JSC "National company "Kazakhstan Gharysh Sapary"

HIGH ACCURACY SATELLITE NAVIGATION SYSTEM OF THE REPUBLIC OF KAZAKHSTAN



Project on creation of High Accuracy Satellite Navigation System of the Republic of Kazakhstan (HSNS RK)



□ Purpose of the project:

- creation of ground infrastructure of HSNS RK to form the condition for the guaranteed obtaining of qualitative coordinate-time and navigation services by users of information of the Global Navigation Satellite System (GNSS) in the territory of the Republic of Kazakhstan

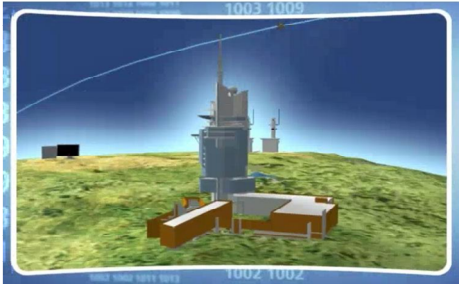
□ Time frame of project realization:

- 2008 – 2013

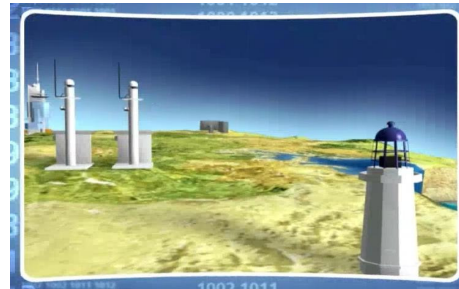
□ Expected results:

- Created and put into operation:
 - Ground infrastructure of the HSNS RK consisting from Centers of Differential Correction and Monitoring, differential stations' network, marine local differential station, mobile differential station;
 - Pilot production of navigation equipment;
 - Laboratory to assess compliance of satellite navigation hardware (LAC);
- Technology transfer and prepared staff of specialists on HSNS RK operation

HSNS RK provides the creation of the following functional elements



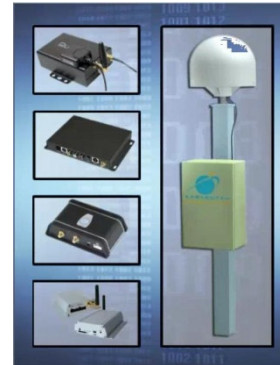
Centers of Differential Correction and Monitoring (CDCM)



Marine differential local station (MLDS)



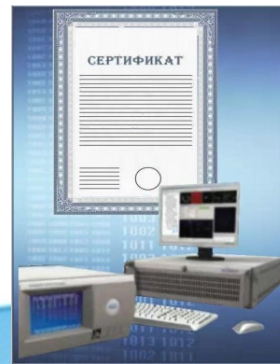
Differential stations' network (DS)



Pilot production of navigation equipment



Mobile differential station (MDS)



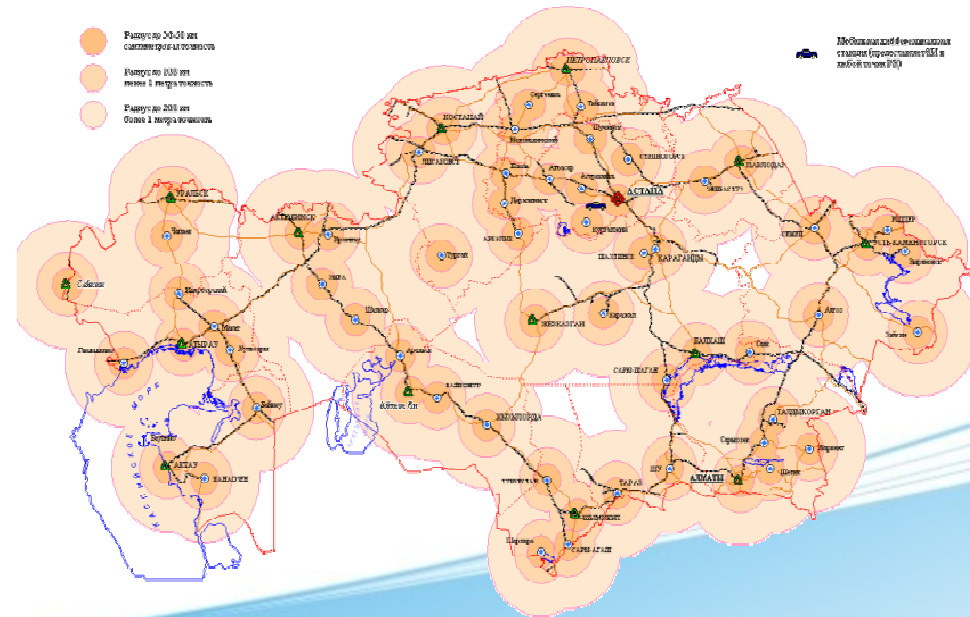
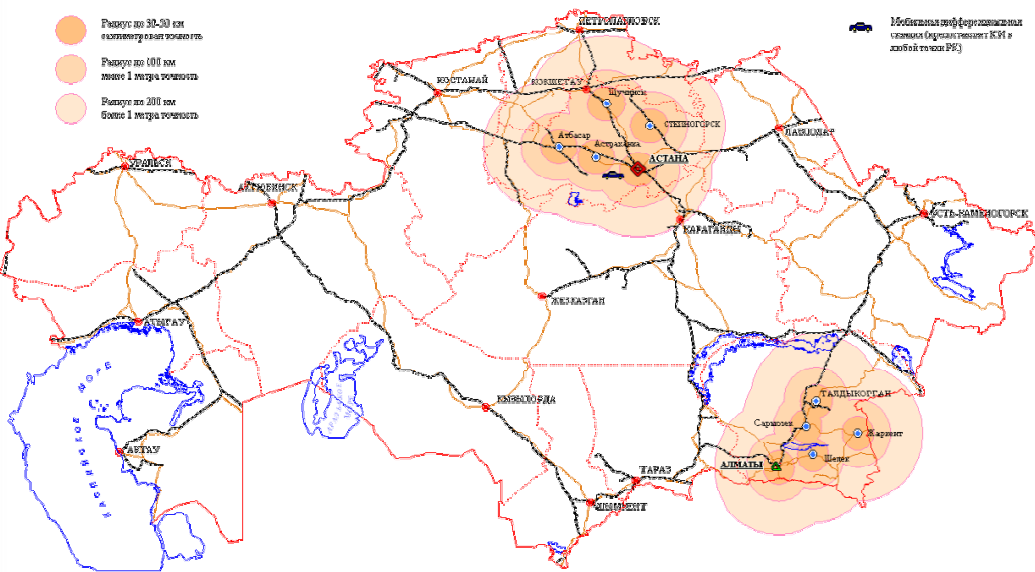
Laboratory to assess compliance of satellite navigation hardware (LAC)

Differential stations' network (DS)

- Today the works are conducted to expand the zone of services coverage of HSNS RK by increasing the number of the differential stations

in 2012 (existing)

by end of 2013 (planned)



HSNS RK services

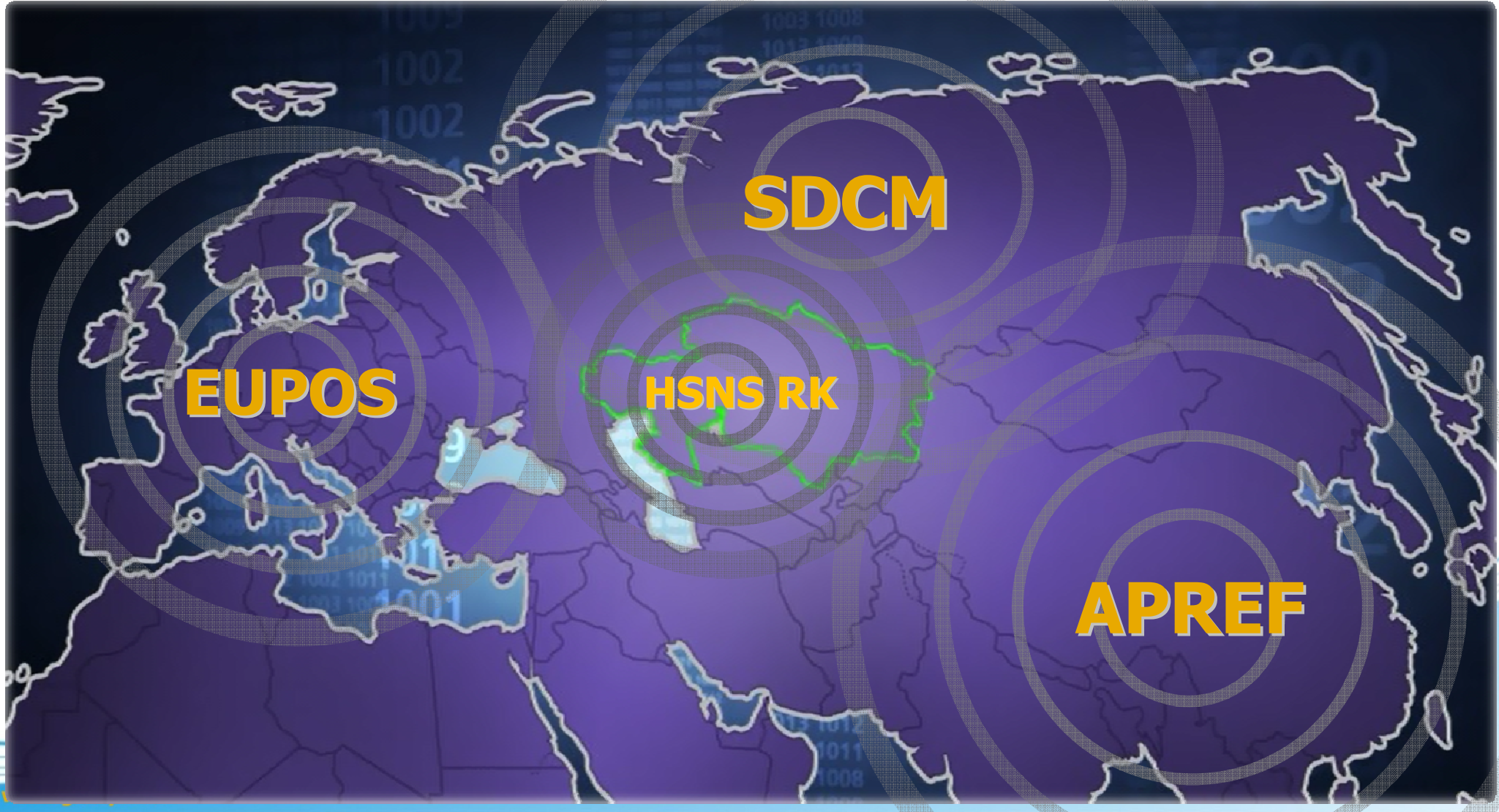
- ❑ DS network deployment for the delivery of corrective information with the following services:
 - a) DGPS service – to provide "meter" accuracy (1,5 – 3 m) in PMB;
 - б) RTK service – to provide «centimeter» accuracy (2 – 10 cm) in PMB;
 - в) PP service – to provide «centimeter» and «subcentimeter» accuracy (less than 1 cm) in the postprocessing mode



International cooperation

- ✓ HSNS RK is included in the European Position Determination System – EUPOS
- ✓ The intergovernmental radionavigation program of CIS countries is approved
- ✓ It was agreed to include HSNS RK to the Asia Pacific reference basis - APREF

Integration of HSNS RK into the international and regional systems





ҚАЗАҚСТАН
ҒАРЫШ САПАРЫ

Thank you for the attention!