



# APSCO

ASIA-PACIFIC SPACE COOPERATION ORGANIZATION

**The Compatible Navigation Terminal System and Its Applications  
in Asia-Pacific Region  
November, 2012**



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- ***APSCO Introduction***
- ***APSCO GNSS Projects***
- ***APSCO Cooperation with China  
Satellite Navigation Office***



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## *Overview of APSCO*

Asia-Pacific Space Cooperation Organization (APSCO) is an inter-governmental organization aim to promote the peaceful uses of outer space in Asia-Pacific Region, and to carry out the cooperation in the fields of space science, space technology and space applications among Member States and regional countries.





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## *The Initial Proposition- Since 1992*

- a) In November of 1992, the *Asia-Pacific Workshop on Multilateral Cooperation in Space Technology Applications* was held in Beijing, which marked the multilateral cooperation in space among Asia Pacific countries started.
- b) **China, Pakistan and Thailand** proposed the institutionalization of the mechanism which was agreed by the participants from 16 Asia-Pacific Countries.





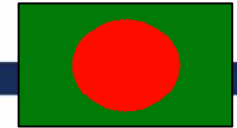
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## *The Initial Proposition*

c) On October 28th of 2005, *the Signing Ceremony of APSCO Convention* was held in the Great Hall of the People, Beijing. 8 countries in Asia-Pacific Region signed the Convention, which included **Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru and Thailand.**



d) On June 1st of 2006, the representative of the Government of **Turkey** signed the APSCO Convention in Beijing. Totally 9 Signatory Countries were presented.





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## *The Establishment of APSCO-2008*

- On December 16th of 2008, the **Inauguration Ceremony of APSCO** was held in Beijing, China. It represented APSCO started its formal operation.





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## *Current Status of APSCO*

- **International Recognition**

APSCO is drawing more international attention since it was created. It has been granted as a *permanent observer* by the United Nations Committee on the Peaceful Uses of Outer Space (UN-COPUOS) on the 52nd Session of Committee meeting in Vienna, on 12 June 2009.

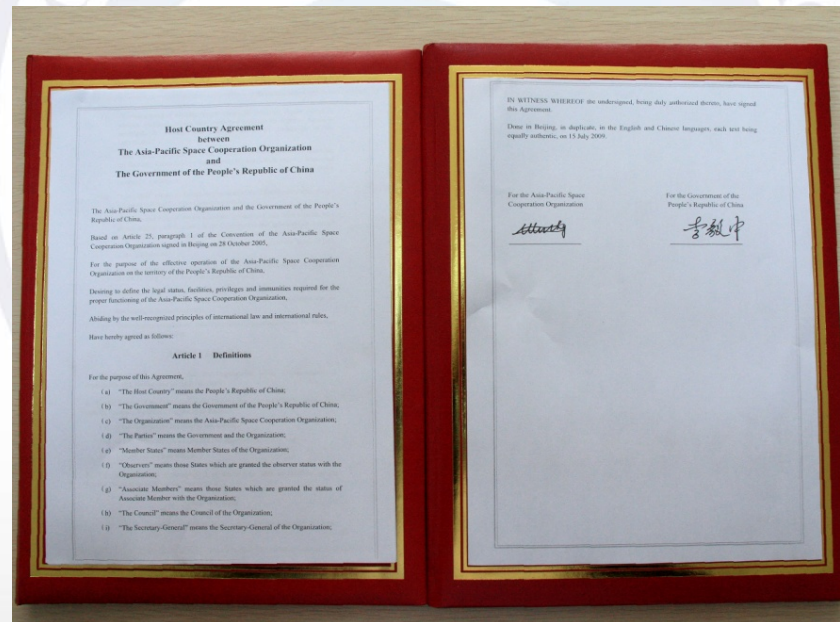




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## *Current Status of APSCO*

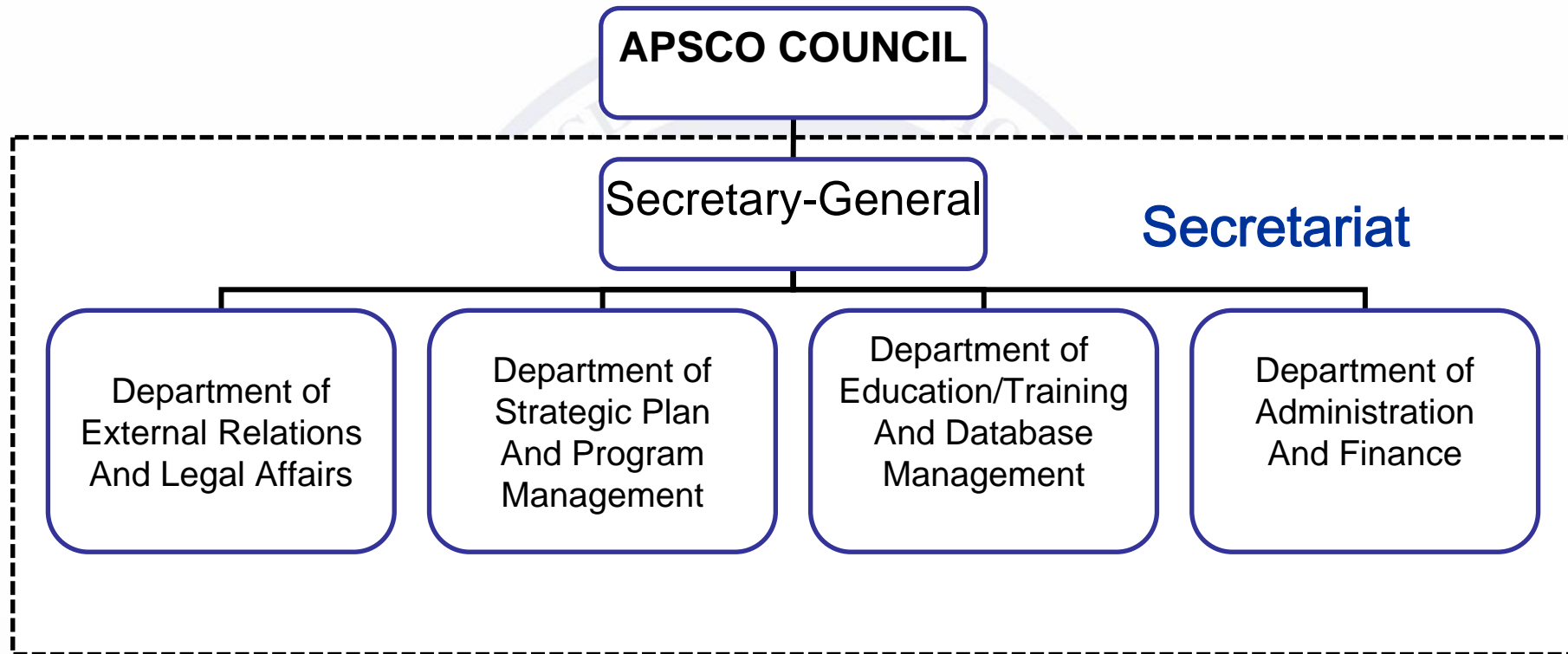
- **The Host Country Agreement** was successfully signed by Dr. Zhang Wei, Secretary-General of APSCO and Mr. Li Yizhong, Minister of Ministry of Industry and Information Technology of China signed on 15 July 2009 in Beijing, China.
- It marked the legal status of APSCO in Hosting Country was steadily confirmed.







## *Current Structure of APSCO*





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## *Chair-board of APSCO Council*

### **The current Chair-board of APSCO Council**

**Chairman of the Council:** Mr. Khondaker M. Asaduzaman (Bangladesh),

**Vice-Chairmen of the Council:** Mr. Chen Qiufa (China),  
Mr. Hamid Fazeli (Iran).



Mr. Chen Qiufa (China).



Mr. Khondaker M. Asaduzaman  
(Bangladesh)



Mr. Hamid Fazeli (Iran)<sup>10</sup>



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## *APSCO Secretariat*

### **The current Secretariat**



**Secretary-General:**  
Dr. Zhang Wei (China)



**Director-General  
of ER/LA**  
Mr. Ahmad  
Talebzadeh  
(Iran)



**Director-General  
of SP/PM**  
Dr. Maqbool  
Ahmed Chaudhry  
(Pakistan)



**Director-General  
of F/A**  
Ms. Liu Xiaohong  
(China)



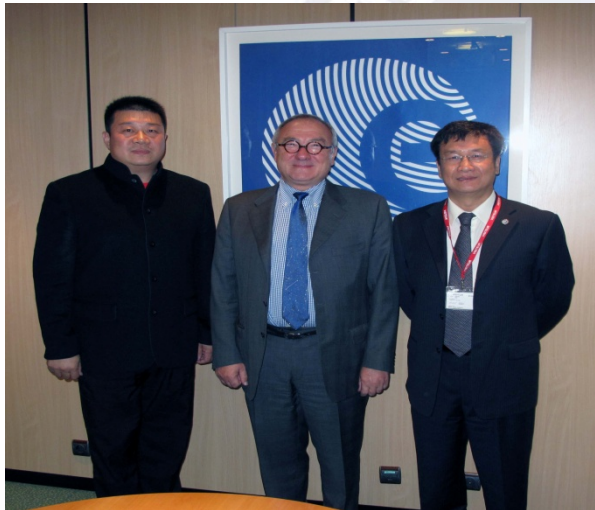
**Director-General  
of ET/DB**  
Mr. Tsoodol  
Nyamkhoo  
(Mongolia)



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## *Communication with International Organizations*

- In September, 2010, APSCO delegation visited the ESA Headquarter for an official meeting.
- In October, 2010, APSCO Officials met with NASA representatives in IAC meeting.

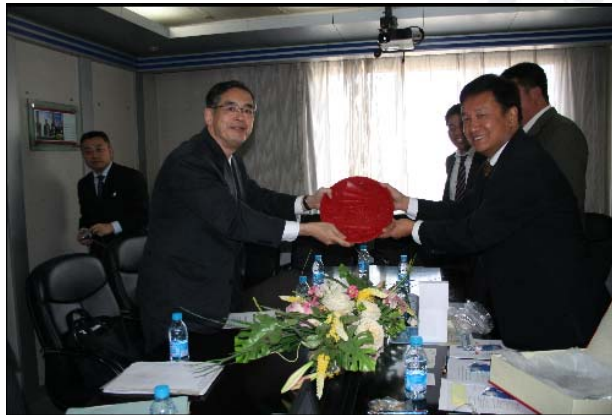




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## *Communication with Non-M.S. Space Agency*

- In October 2009, APSCO received a delegation from Japan Aerospace Exploration Agency (JAXA)
- In July 2010, APSCO met with delegation from The Federal Space Agency of Russia.
- In October 2010, APSCO visited National Space Agency of Ukraine (NSAU).
- In June, 2011, APSCO delegation visited National Space Agency of Kazakhstan (KAZCOSMOS)
- In October, 2011, APSCO delegation visited Space Agency of South Africa (SANSA)

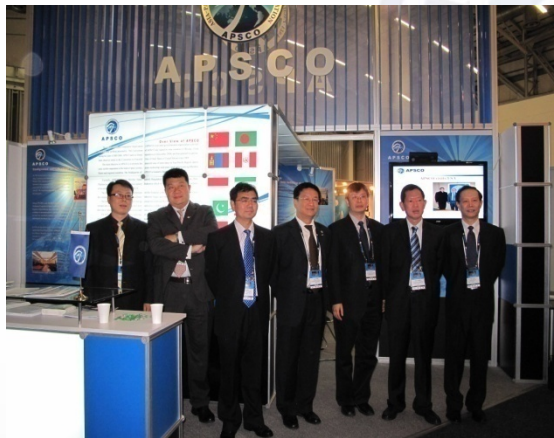




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## *Actively Participating in International Activities*

- In November, 2010, APSCO officers attended the workshop on Space Law “Activities of States in Outer Space in Light of New Developments” in Thailand.
- In October, 2011, APSCO exhibited the in IAC meeting in South Africa.
- In June, 2012, APSCO official participated in Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)
- In October, APSCO exhibited the in IAC meeting in Naples Italy.





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## *Cooperative activities in APSCO*

**In order to achieve the aim to**

- ✓ Promoting cooperative activities for social and economical benefit of M.S.,
- ✓ Improving M. S. space technology capacity,
- ✓ Effectively integrate the advantage of the region in finance, technology, infrastructure, human resource, market and etc.

APSCO developed several cooperative programs and education/training programs.



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## *Cooperative activities in APSCO*

Areas	Project	Current Status
Space Technology Development	APSCO Applied High Resolution Satellite Project (APRS)	Feasibility Study was completed
	APSCO Geo-Telecommunication Satellite and its Application	Feasibility Study
Space Science	Research on Atmospheric Effects on - Ka Band Rain Attenuation Modeling and - Ionospheric Modeling through Study of Radio Wave Propagation and Solar Activity	Feasibility Study was completed
	Development of Asia-Pacific Ground-Based Optical Space Objects Observation System (APOSOS)	Implementation Phase
	Electromagnetic Satellite Payload for Earthquake Prediction	Feasibility Study
	Research on Determining Precursor Ionospheric Signatures of Earthquakes by Ground Based Ionospheric Sounding	Feasibility Study
Space Application	Applications of Compatible Navigation Terminal System	Feasibility Study was completed
	Data Sharing Service Platform and Its Application Pilot Project	Implementation Phase
Training	APSCO Small Student Satellites joint development among University of MS	Feasibility Study
	Study of the Training and Education Center of APSCO	Feasibility Study was completed





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## **Background**

- ✓The feasibility study of the Applications of Compatible Navigation Terminal System project was approved in First APSCO Council meeting.
- ✓The objective of the proposal is to conduct the feasibility study of the applications of compatible navigation terminal systems and to promote the applications of satellite navigation system (Compass, GPS, GLONASS, and Galileo) in Asia-Pacific region.
- ✓The purpose of the project is to investigate the requirements of Asia-Pacific region in GNSS application and improve technical capacity of the industries in Member States through the joint development and implementation of the project. It will further extend the application systems and explore the potential market based on derived applications.



## **Introduction**

During the feasibility study, 13 projects were proposed by the Member States based on their need and interest in navigation applications. The proposed projects covered the application in various fields including transportation, logistic, aviation, timing, disaster management, environment monitoring and etc..

Through the joint efforts by experts from Member States, according to the common interests, there were 2 projects short listed as priority options. As well, the feasibility study of those 2 prioritized projects were consolidated.

The prioritized projects are:

- a) Development and Demonstration Applications of Compatible GNSS Terminals for Emergency Management and Disaster Rescue
- b) Software Compass/GPS Receiver



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## *APSCO GNSS Project*

### **Development and Demonstration of Applications of Compatible GNSS Terminals for Emergency Management and Disaster Rescue**

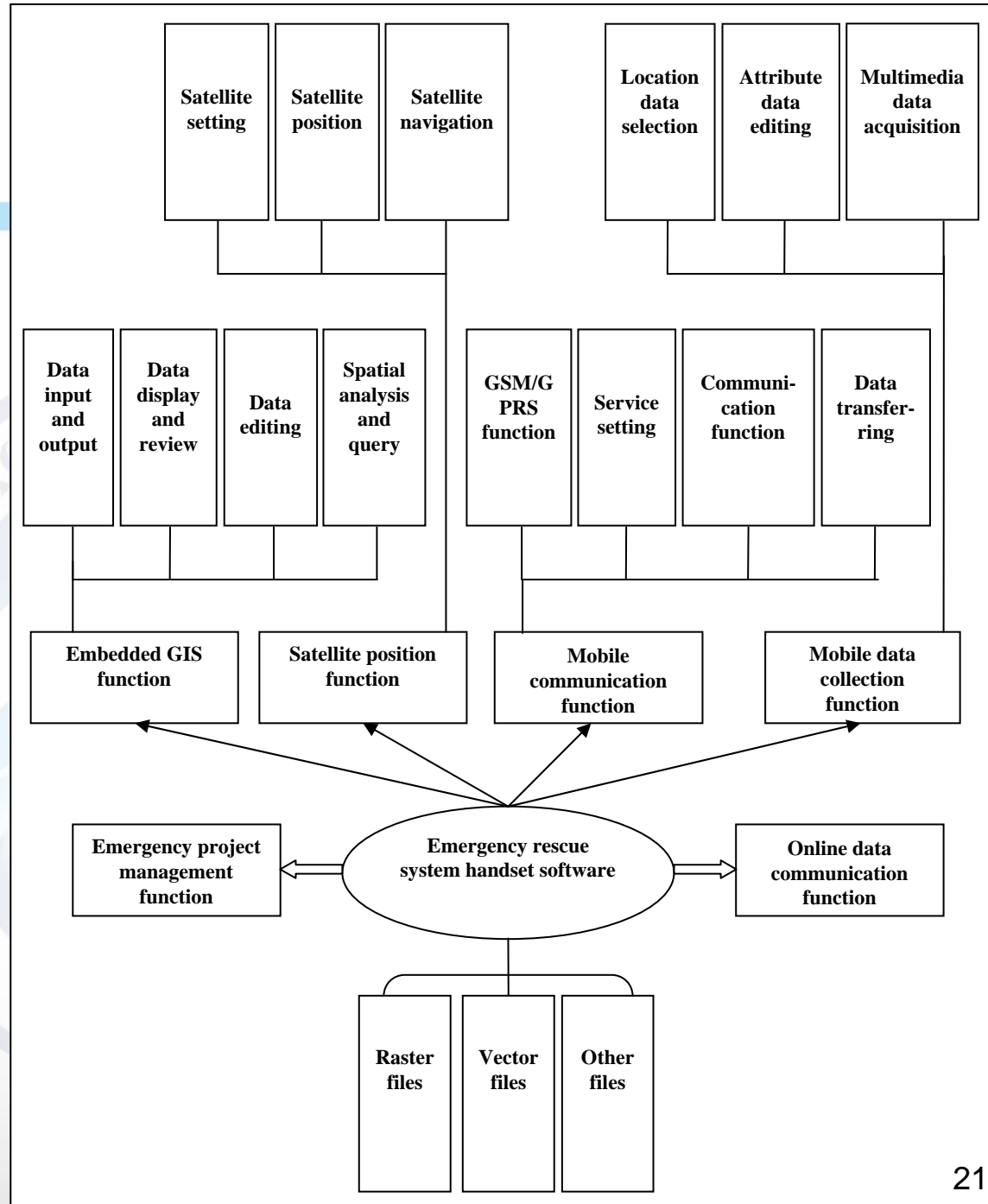
- Leading Country: China
- Implementation duration: 3 years

#### **Objectives:**

- ✓ Develop terminals for Emergency Management and Disaster Rescue based on GNSS compatible system (EMDR)
- ✓ Build applications demonstration using terminals to verify its functionality
- ✓ Promote personnel training and technology, industry and cultural exchanges among APSCO Member States and Asia Pacific region

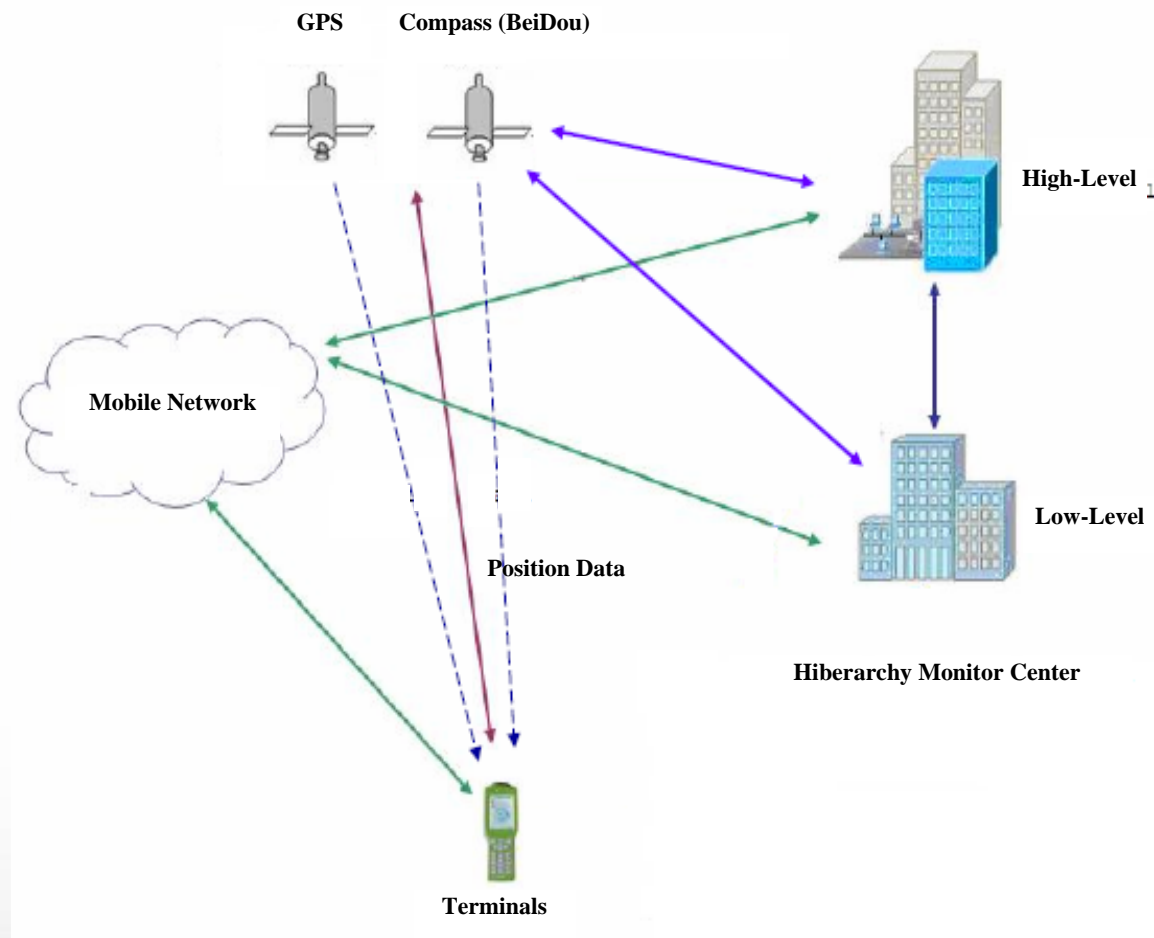


## Terminal Software System





Construction of  
EMDR  
application  
demonstration  
system.





## **Software Compass/GPS Receiver**

- Leading Country: Pakistan
- Implementation duration: 2.5 years

### **Objectives :**

- ✓ To design a software Compass/GPS receiver as a complete radio navigation package set.
- ✓ To provide navigation services to APSCO countries for applications in Aviation, Maritime and marine operations, Agriculture, Surveying and mapping, Land and rail transport.
- ✓ Provide training and exchange technology to improve the capabilities of APSCO Member States and Asia Pacific region.



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## *APSCO Cooperation with China Satellite Navigation Office*

Recognizing the achievement that the BeiDou Navigation Satellite System has started providing Initial Operational Services since the end of 2011, and plans to provide Full Operational Services by the end of 2012 to the Asia-Pacific region;

Believing that the promotion of applications of BeiDou System on the APSCO multilateral cooperation platform and the pooling of space resources will benefit the social and economic development of its Member States.

With the guidance of the Chinese Government, APSCO and China Satellite Navigation Office agree to establish long-term and stable cooperative relationship, for joint promotion of exchange, cooperation and application of BeiDou Navigation Satellite System among M.S. of APSCO.



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## *APSCO Cooperation with China Satellite Navigation Office*

**On 13th July, 2012 APSCO and China Satellite Navigation Office signed the Letter of Intent for joint promotion of exchange, cooperation and application of BeiDou Navigation Satellite System.**

Both agreed:

Jointly promote BeiDou System and its application and launch BeiDou/GNSS Application Demonstration & Experience Campaign (BADES) among Member States of APSCO. As an regional organization, APSCO facilitate CSNO in bilateral and multi-lateral cooperative consultations with Member States of the APSCO.

Jointly hold BeiDou thematic training courses, seminars and technical exchanges among Member States of APSCO by using existing resources and education schema. China Satellite Navigation Office shall actively support APSCO's cooperation programs in the field of satellite navigation



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## *APSCO Cooperation with China Satellite Navigation Office*

### *Achieved Cooperation:*

APSCO witnessed BADES first Campaign in Pakistan in September, 2012

APSCO invited experts from China Satellite Navigation Office gave the lecture in APSCO training course in Bangladesh.

APSCO will keep close cooperating with China Satellite Navigation Office.

**Expecting more cooperation with regional organizations and industries, integrate the advantages of the region in technologies, resources and market, and promote collaborative programs of common interests.**



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**Thank You!**