Regional Space Cooperation: Organization and Activities
APRSAF 17th, November 26, 2010
• **About the Organization**

• **Space Activities and Cooperation**
In the November of 1992, the Asia-Pacific Workshop on Multilateral Cooperation in Space Technology and Applications was held in Beijing. China, Pakistan and Thailand proposed the institutionalization of the mechanism which was agreed by the participants from 16 Asia-Pacific Countries.
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.**
On June 1st of 2006, the representative of the Government of Turkey signed the APSCO Convention in Beijing.

9 Signatory Countries.
• **The Establishment of APSCO-2008**

• On December 16th of 2008, the Inauguration Ceremony of APSCO was held in Beijing, China.
The Structure of APSCO

APSCO COUNCIL

Secretary-General

Department of External Relations And Legal Affairs
Department of Strategic Plan And Program Management
Department of Education/Training And Database Management
Department of Administration And Finance
The Chair-board of APSCO Council

Chairman of the Council: Mr. Thaneerat Siriphachana (Thailand),
Vice-Chairmen of the Council: Mr. Kamrul Hasan (Bangladesh),
Mr. Chen Qiufa (China).

Mr. Kamrul Hasan (Bangladesh)  Mr. Thaneerat Siriphachana (Thailand)  Mr. Chen Qiufa (China).
The Secretariat

Secretary-General:
Dr. Zhang Wei (China)

Director-General of Departments:
Mr. Ahmad Talebzadeh (Iran)
Dr. Maqbool Ahmed Chaudhry (Pakistan)
Mr. Tsoodol Nyamkhuu (Mongolia)
Ms. Liu Xiaohong (China)
Current Status of APSCO

• International Recognition

APSCO is drawing more international attention. 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.
**Current Status of APSCO**

- **Host Country Agreement**

Dr. Zhang Wei, Secretary-General of APSCO and Mr. Li Yizhong, Minister of Ministry of Industry and Information Technology of China signed the Host Country Agreement on 15 July 2009 in Beijing, China.
In November of 2009, APSCO moved into its new headquarters office building, which is located in Beijing and donated by Chinese Government.
The Exhibition of Member State Space Achievements was held at the APSCO Headquarter from December 2009.
• The First Council Meeting in 2008

On December 17-18 of 2008, ministerial-level representatives from 9 Signatory Countries, along their delegations attended the First Council Meeting of APSCO.
The Second Council Meeting in 2009

- Ministerial-level Council meeting is held in Beijing during 17-18 Decembers, 2009
The 3rd Council Meeting of APSCO
September 16th -17th, 2010
Space Activities and Cooperation
Fields of Cooperation

• Article 6 of the Convention of APSCO
  • Space technology and programs of its applications;
  • Earth observation, disaster management, environmental protection, satellite communications and satellite navigation and positioning;
  • Space science research;
  • Education, training and exchange of scientists/technology;
  • Establishment of a central data bank for development of programs of the organization and dissemination of technical and other information relating to the programs and activities of the Organization.
  • Other cooperative programs agreed upon by the Member States.
The Activities of APSCO

• **Education and Training Program**
  - Training Course on Remote Sensing Technology and Applications for Mongolia / Indonesia held in May 2005, Beijing.
  - Training Course on Satellite Technology and Spacecraft Project Management held in June 2005, Beijing.
  - Training Course on Reception Stations of FY Satellite Data Broadcasting System (DVB-S) held in July 2006 in Beijing.
  - Training Course on Space Technology Applications held in 2007, Peru.
  - Nine-Month Master Program on Space Technology Applications held from 10 July 2006 to 10 April 2007, Beijing.
Training Course on:
Data Processing and Applications on Remote Sensing Satellite
May 11-22, 2009, Beijing
Training Course on GNSS and its Applications
June 4-22, 2010, Beijing
Co-sponsored by Ministry of Industry and Information Technology (MIIT) of China
organized by Peking University
Master Program on Space Technology Application (MASTA 2008 and 2010) for APSCO Member States

APSCO supported by The Beihang University of China jointly hold the Master Program on Space Technology Application, which starts from September 2010. (Graduation Ceremony of MASTA 2008)
Workshop/Symposium

The First International Symposium on
Space Cooperation for the Asia-Pacific Region
July 20-24, 2009, Thailand
Second APSCO Symposium on Food Security & Monitoring of Agriculture through Satellite Technology
Islamabad, Pakistan
24 September
Donation Ceremony of Reception Stations of FY Satellite Data Broadcasting System (DVBS) to 7 Signatory States to APSCO Convention by the Chinese Government was held on 24 March in Beijing.
• Space Cooperation - SMMS

On September 6th of 2008, 30 delegates from 9 Signatory States witnessed the Launch of the Environment and Natural Disaster Monitoring Satellite (HJ-A, also named as Small Multi-Mission Satellite) at Taiyuan Lunching Center.
Space Cooperation –
KABES/SMMS Receiving Station in Thailand

In December of 2008, the Commissioning of KABES/SMMS Receiving Station in Thailand.
• Space Cooperation - Ground Station in Thailand

• On 21 December 2009, under the Cooperation Framework of APSCO, Center for Resources Satellite Data and Applications (CRESDA) signed the agreement with the Government of Thailand, to build the Receiving Station of SMMS Satellite in Bangkok.
Projects approved by the Council Meetings

1. Establish the Spatial Data Sharing Service Platform and Its Application Pilot Project;
2. Proposal for APSCO Applied High Resolution Satellite Project;
3. Research on Atmospheric Effects on:
   (i) Ka Band Rain Attenuation Modeling;
   (ii) Ionosphere Modeling through Study of Radio Wave Propagation and Solar Activity;
4. Development of Asia-Pacific Ground Based Optical Satellite Observation System (APOSOS);
5. Feasibility Study of the Applications of Compatible Navigation Terminal System;
6. Short-term Training Course on Satellite Technologies
7. Telecommunication Satellites
8. Small Student Satellites joint development among University of MS
Space Cooperation –
The feasibility study of projects by experts of MS
System Description

1. User Service and Information Release Subsystem

3. Distributed Retrieval Subsystem

4. Data Management Subsystem

Data Sharing Platform

Portal of Data Information Service System

Normal User

Internal User

System Administrator

User Service and Information Release Subsystem

Internal Operation Assistant Subsystem

Distributed Retrieval Subsystem

Data Management Subsystem

Spatial Data

Document Data
General structure

- **Satellites**
- **TT&C**
- **Task scheduling**
- **Data Receiving & Processing**
- **Data Sharing**

Remote Sensing Satellites (APRS)
Key Technical Topics

- System Configuration and Specification
  1. Orbit parameters
  2. Imaging modes
  3. Mission Planning

- Space Segment System Specification
  1. Payload
  2. AOCS
  3. Structure and Thermal Control
  4. Data Transmission System
  5. TT&C
  6. Propulsion
  7. OBDH

- Minimum Requirement Case (2 Meter H.R + WFI+HSI)
  Sat 1: Two 2/8m Pan/MSI+HSI
  Sat 2: 2/8m Pan/MSI+16m WFI
Ka Band Rain Attenuation Modeling and Ionosphere Modeling through Study & Radio Wave Propagation and Solar Activity

• **Lead Country : Thailand**
  • For Atmospheric Effects on Ka Band Rain Attenuation Modeling, the objective is to develop the Ka-band rain attenuation model suitable for member states and compare it with current ITU-R model.

  • For Atmospheric Effects on Ionosphere Modeling through Study of Radio Wave Propagation and Solar Activity, the objective is to develop the ionosphere models based on the measured data from the radio wave at different frequency reflecting from ionosphere due to solar activity suitable for Asia-Pacific region.
1. **Objective:** The basic objective is to build the network with existing facilities, with the aim of finding objects and space debris in orbit for research purposes.

2. **Benefit:** This network will derive benefit from the wide geographical distribution of APSCO countries and sharing the data in participating countries.

3. **Schedule:**

   - **APOSOS First Meeting**
     - feasibility study plan (April 2010)
   - **APOSOS Second Meeting**
     - draft report discussion (May 2010)
   - **Feasibility Evaluation**
   - **Administrative Meeting**
     - current node condition analysis
   - **4th Council Meeting**
     - finalized report discussion
     - report to the council for approval

   Leading country: **China and Turkey**
4. Existing Infrastructures and Potential Nodes
### 13 Proposed Projects

- 8 were concerned with the construction of navigation application system

<table>
<thead>
<tr>
<th></th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development and Demonstration of the Applications of Compatible GNSS Terminals for Emergency Management and Disaster Rescue</td>
</tr>
<tr>
<td>2</td>
<td>Vessel Safety and Rescue Information System</td>
</tr>
<tr>
<td>3</td>
<td>Public Switching Platform for Key Commercial Vehicles Dynamic Information</td>
</tr>
<tr>
<td>4</td>
<td>Bridge Health and Safety Monitoring System</td>
</tr>
<tr>
<td>5</td>
<td><strong>BeiDou Yuheng Container Terminal Operations Monitoring and Controlling System</strong></td>
</tr>
<tr>
<td>6</td>
<td>Dynamic Traffic Information Service System</td>
</tr>
<tr>
<td>7</td>
<td>Network RTK system for the application of urban fundamental construction</td>
</tr>
<tr>
<td>8</td>
<td>Location Based <strong>Intergrated</strong> Work Safety supervision System</td>
</tr>
</tbody>
</table>
4 were concerned with satellite navigation application technology and product R&D

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Multimode navigation chips and navigation end products</strong></td>
</tr>
<tr>
<td></td>
<td>applied in compatible navigation systems</td>
</tr>
<tr>
<td>2</td>
<td><strong>Satellite Navigation Simulation and Test system</strong></td>
</tr>
<tr>
<td>3</td>
<td><strong>LBS technology</strong></td>
</tr>
<tr>
<td>4</td>
<td><strong>Software Compass/GPS Receiver</strong></td>
</tr>
</tbody>
</table>

1 project was concerned with the construction of satellite navigation augmentation system

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>APSCO Satellite Based Augmentation System</strong></td>
</tr>
</tbody>
</table>
More activities in near future

• Study of the Training and Education Center of APSCO
• Study of the Asia-Pacific Research Center of Space Law
• MASTA Program of Degree Education for more than 45 students in 2011-2013
• Four training courses in remote sensing and communications fields in 2010 and 2011
• The Third International Symposium of APSCO in 2010, on early warning of earthquake from space
• UN/Thailand/ESA/APSCO workshop on Space Law in Thailand in November 2010
Potential Cooperation Fields

• Training, Education and Symposium
• Research Projects and Optional Projects
• Space Law and Regional Policy Research
• Remote Sensing Data Sharing
• Small Student Satellite Development
• Long Term Space Development Plan
• Others
Thank You!