Update of BDS/GNSS International Education and Capacity Building

14th Meeting of the International Committee on Global Navigation Satellite Systems

YANG Dongkai
BeiDou International Exchange and Training Center of China Navigation System Office (BD-IETC of CNSO)

2019-12-10

CONTENT

01

BDS/GNSS International Education 2019

01 BDS/GNSS International Education 2019

I. BeiDou International Exchange and Training Center

- **Established** on 24 August, **2012**
- **Supported** by China Satellite Navigation Office (**CSNO**)
- **Hosted** by **Beihang University**, China

01 BDS/GNSS International Education 2019

➢ **BD-IETC aims to be**

— ***the base of international exchange and training on BDS/GNSS.***

- To plan and conduct BDS/GNSS international exchange and training activities.
- To explore and integrate domestic/international GNSS educational resources

— ***an important network node of GNSS international education.***

- To expand the channels of international exchange and cooperation
- To share the resources of experts and corporate partners at home and abroad
- To put emphasis on brand operation and international influence enhancement
- To promote the global popularization and applications of BDS/GNSS.

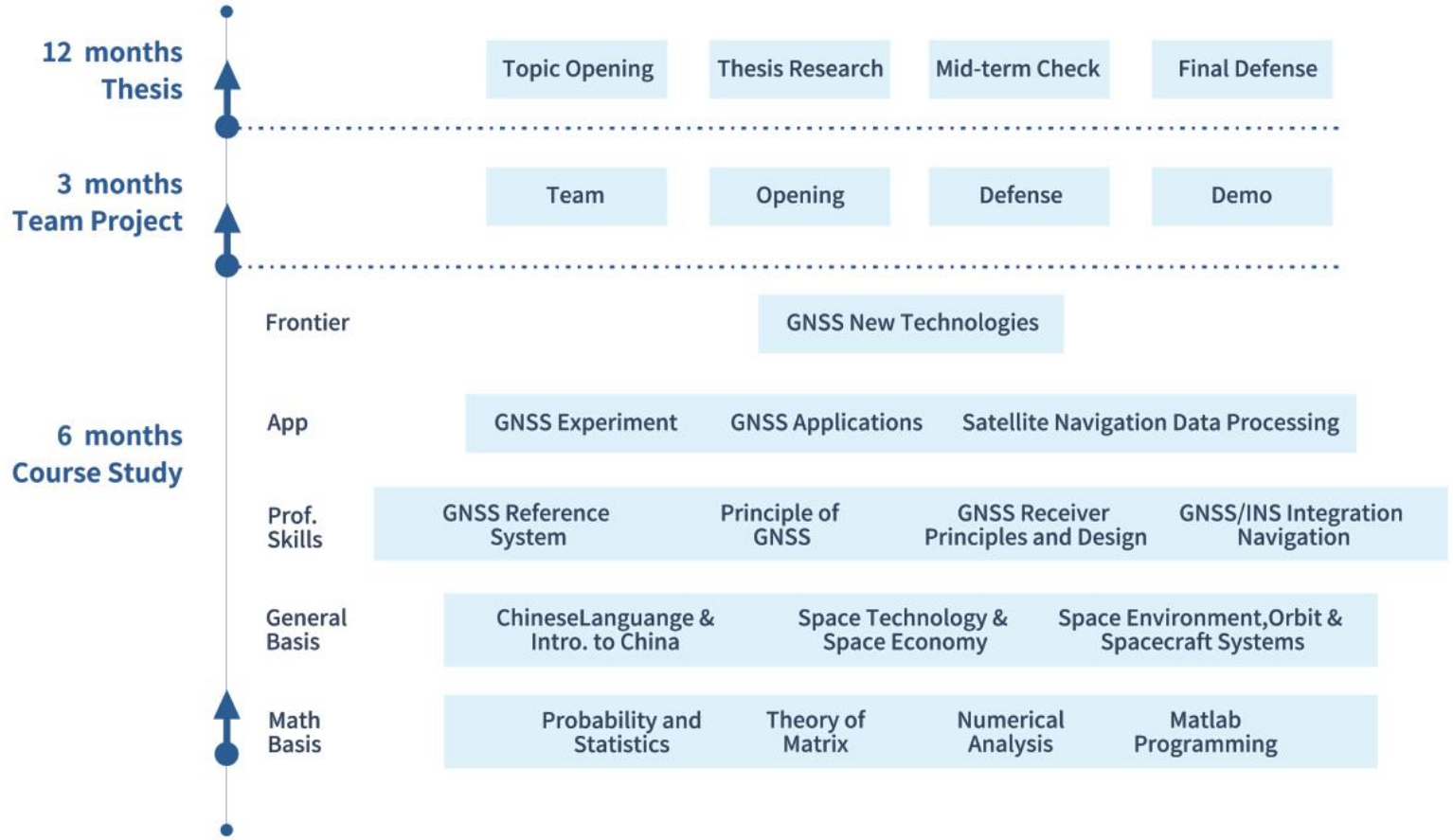
01 BDS/GNSS International Education 2019

II. International Education and Training Programs

	Short Program	Middle Program	Long Program (Degree Program)
Trainee	Officers and managers	Technicians and engineers	Overseas students (major in navigation)
Period	3-5 days	1-3 months	1-2 years
Form	Lectures given by famous navigation experts related to BDS/GNSS	Courses and experiments mainly focused on basic principles of GNSS	Specialized courses and thesis research (degree award by Beihang Uni.)

01 BDS/GNSS International Education 2019

➢ GNSS Degree Program



01 BDS/GNSS International Education 2019

Master's Degree Program

Year	Number	Countries of Participants
2012	20	Indonesia, Iran, Mongolia, Pakistan, Peru, Spain, Thailand
2013	13	Bangladesh, Indonesia, Iran, Mongolia, Pakistan, Peru, Thailand
2014	10	Indonesia, Mongolia, Nigeria, Pakistan, Peru, Thailand
2015	6	Algeria, Bangladesh, Indonesia, Mozambique, Pakistan
2016	10	Bolivia, Brazil, Croatia, Iran, Nigeria, Peru, Thailand, Ukraine, Venezuela
2017	11	Bangladesh, Bolivia, Mongolia, Pakistan, Peru, Thailand, Turkey
2018	6	Ethiopia, Iran, Pakistan, Peru, Turkey
2019	12	Peru, Bolivia, Iran, Turkey, Mongolia, Pakistan, Nigeria, Togo, Egypt, Algeria

- 2012-2019, totally 88

01 BDS/GNSS International Education 2019

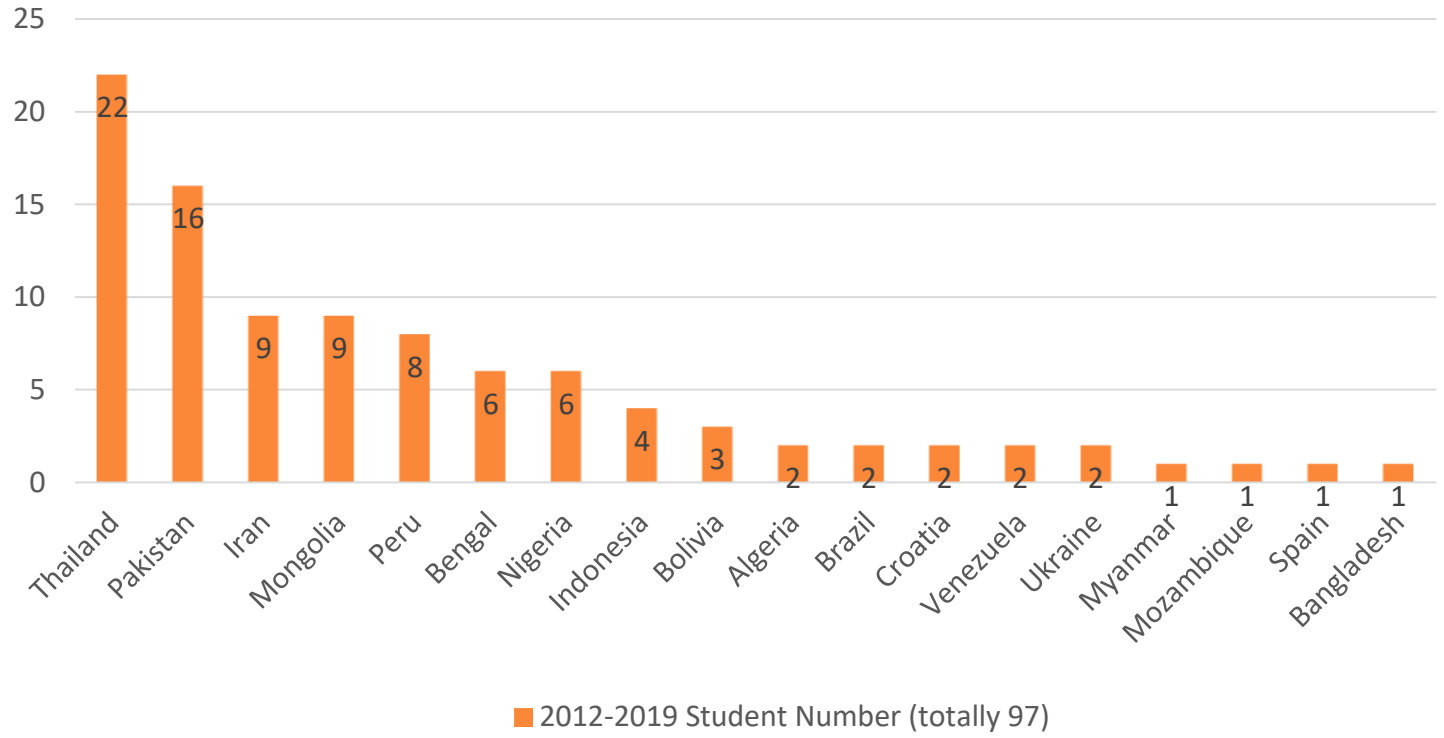
Doctoral Degree Program

Year	Number	Countries of Participants
2013	2	Thailand
2014	3	Bangladesh, Iran, Thailand
2015	5	Mongolia, Peru, Thailand
2016	6	Bangladesh, Indonesia, Myanmar, Nigeria, Venezuela
2017	2	Iran
2018	4	Indonesia, Iran, Nigeria, Pakistan
2019	3	Iran, Pakistan, Myanmar

- 2013-2019, totally 25

01 BDS/GNSS International Education 2019

Degree Award



01 BDS/GNSS International Education 2019

➢ Training Activities 2019

GNSS Basic Courses Middle Term Training

Dec. 2, 2018-Jan. 14, 2019 in Algiers, Algeria

No.	Course Name	Hours
1	Principles of Global Navigation Satellite Systems	21
2	GNSS Navigation Signals	21
3	GNSS High Precision Data Processing	21
4	GNSS Experiment	15
5	GNSS/INS Integrated Navigation	21
6	GNSS Application	15
7	GNSS Surveying and Mapping Technique	21
8	IGMAS Precision products and time-frequency applications	15
9	GNSS Software Receiver	21

01 BDS/GNSS International Education 2019

BDS/GNSS Training of China-Arab BDS Cooperation Forum

April 1-2, 2019 in Tunisia

Totally 48 trainee from Tunisia, Egypt, Algeria, Iraq and Mauritania

BDS/GNSS International Education 2019

III. International Education Cooperation 2019

China-Croatia Education Cooperation

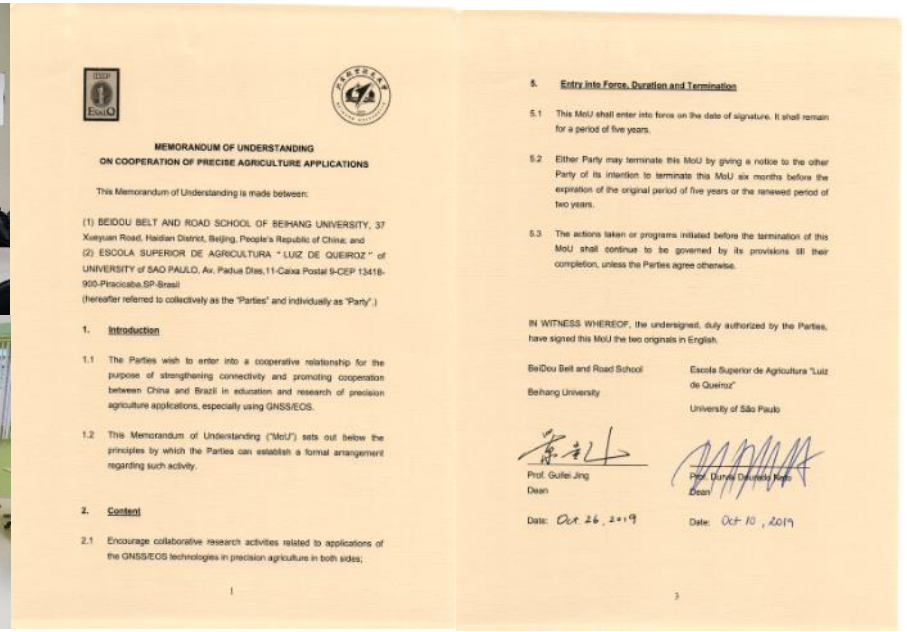
The course "GNSS Data Processing"
by Prof. Renato from the University of Rijeka
April 15-20, 2019 at Beihang University

13th Annual Baska GNSS Conference
May 12-16, 2019 in Baska, Croatia

01 BDS/GNSS International Education 2019

China-Brazil Cooperation on GNSS Agriculture Applications

June 17-18, 2019 in Brazil



MEMORANDUM OF UNDERSTANDING
ON COOPERATION OF PRECISE AGRICULTURE APPLICATIONS

This Memorandum of Understanding is made between:

(1) BEIDOU BELT AND ROAD SCHOOL OF BEIHANG UNIVERSITY, 37 Xueyuan Road, Haidian District, Beijing, People's Republic of China; and
(2) ESCOLA SUPERIOR DE AGRICULTURA " LUIZ DE QUEIROZ " of UNIVERSITY of SAO PAULO, Av. Padua Dias,11-Caixa Postal 9-CEP 13418-900-Piracicaba,SP-Brasil
(hereafter referred to collectively as the "Parties" and individually as "Party".)

1. Introduction

1.1 The Parties wish to enter into a cooperative relationship for the purpose of strengthening connectivity and promoting cooperation between China and Brazil in education and research of precision agriculture applications, especially using GNSS/EOS.

1.2 This Memorandum of Understanding ("MoU") sets out below the principles by which the Parties can establish a formal arrangement regarding such activity.

2. Content

2.1 Encourage collaborative research activities related to applications of the GNSS/EOS technologies in precision agriculture in both sides;

5. Entry into Force, Duration and Termination

5.1 This MoU shall enter into force on the date of signature. It shall remain for a period of five years.

5.2 Either Party may terminate this MoU by giving a notice to the other Party of its intention to terminate this MoU six months before the expiration of the original period of five years or the renewed period of two years.

5.3 The actions taken or programs initiated before the termination of this MoU shall continue to be governed by its provisions till their completion, unless the Parties agree otherwise.

IN WITNESS WHEREOF, the undersigned, duly authorized by the Parties, have signed this MoU the two originals in English.

BeiDou Belt and Road School
Beihang University

Prof. Guifei Jing
Dean

Date: Oct. 26, 2019

Escola Superior de Agricultura "Luiz de Queiroz"
University of São Paulo

Dean

Date: Oct 10, 2019

MoU on GNSS Agriculture Applications Cooperation with the University of Sao Paulo,
June 17, 2019 in Sao Paulo

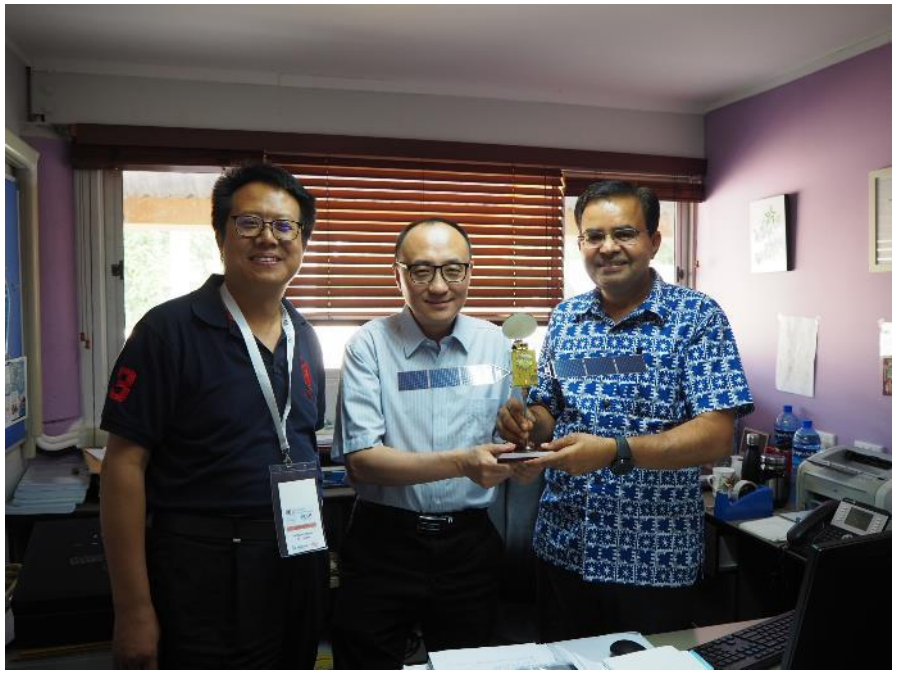
3rd Brazil-China High Level Dialogue on Science, Technology and Innovation,
June 18, 2019 in Brasilia

01 BDS/GNSS International Education 2019

United Nations/Fiji Workshop on the Applications of GNSS

June 24-28, 2019 in Suva, Fiji

"Capacity Building of GNSS Education in China and its enlightenment"

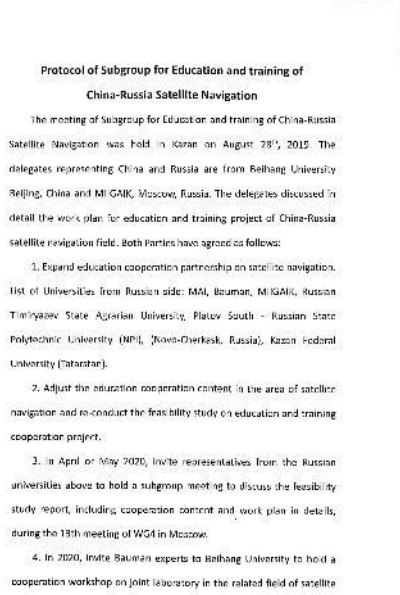


Agreement on BDS Applications cooperation with Fiji National University

01 BDS/GNSS International Education 2019

The 6th meeting of China-Russia Cooperation Committee on Satellite Navigation

Aug. 28-29, 2019 in Kazan, Russia.



Protocol of Subgroup for Education and training of
China-Russia Satellite Navigation

The meeting of Subgroup for Education and training of China-Russia Satellite Navigation was held in Kazan on August 28th, 2019. The delegates representing China and Russia are from Beihang University Beijing, China and MIIGAiK, Moscow, Russia. The delegates discussed in detail the work plan for education and training project of China-Russia satellite navigation field. Both Parties have agreed as follows:

1. Expand education cooperation partnership on satellite navigation. list of Universities from Russian side: MAI, Bauman, MIIGAiK, Russian Timiryazev State Agrarian University, Platov South - Russian State Polytechnic University (NPI), (Novo-Cherkesk, Russia), Kazan Federal University (Tatarstan).

2. Adjust the education cooperation content in the area of satellite navigation and re-conduct the feasibility study on education and training cooperation project.

3. In April or May 2020, invite representatives from the Russian universities above to hold a subgroup meeting to discuss the feasibility study report, including cooperation content and work plan in details, during the 13th meeting of WG4 in Moscow.

4. In 2020, invite Bauman experts to Beihang University to hold a cooperation workshop on joint laboratory in the related field of satellite navigation.

5. In September 2020, submit the feasibility study report to the 7th meeting of CRCCSN (in China) for consideration.

The group leaders of China-Russia Education and training subgroup:

China Party: Xiu Chundi

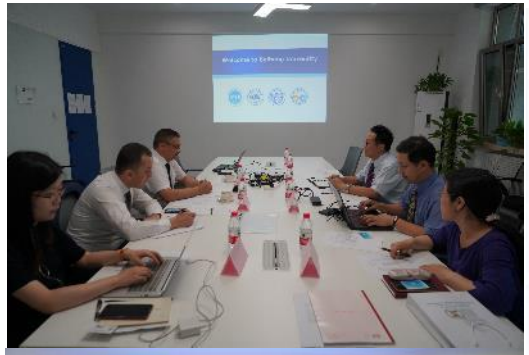
Russia Party: Kopiyanov Andrey

On 28th August 2019

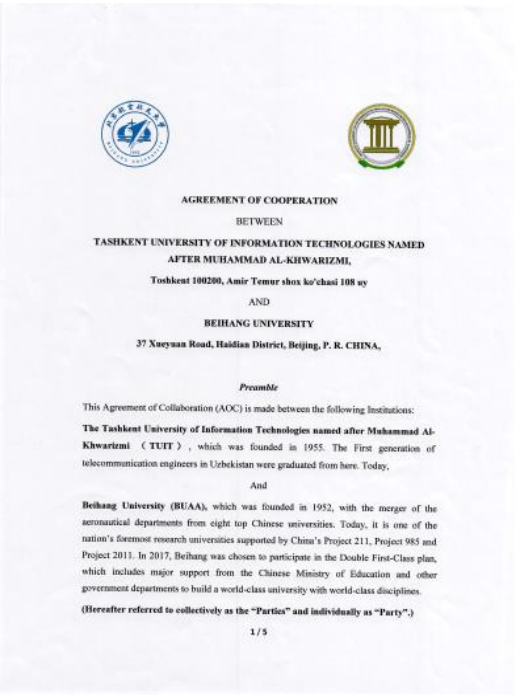
Protocol of Subgroup for Education and Training of China-Russia Satellite Navigation

01 BDS/GNSS International Education 2019

China-Uzbekistan Education Cooperation



May 21-26, 2019
in Beijing, China



AGREEMENT OF COOPERATION

BETWEEN

TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES NAMED AFTER MUHAMMAD AL-KHWARIZMI,

Toshkent 100200, Amir Temur shox ko'chasi 108 uy

AND

BEIHANG UNIVERSITY

37 Xueyuan Road, Haidian District, Beijing, P. R. CHINA,

Preamble

This Agreement of Collaboration (AOC) is made between the following Institutions:

The Tashkent University of Information Technologies named after Muhammad Al-Khwarizmi （**TUIT**）, which was founded in 1955. The First generation of telecommunication engineers in Uzbekistan were graduated from here. Today,

And

Beihang University (BUAA), which was founded in 1952, with the merger of the aeronautical departments from eight top Chinese universities. Today, it is one of the nation's foremost research universities supported by China's Project 211, Project 985 and Project 2011. In 2017, Beihang was chosen to participate in the Double First-Class plan, which includes major support from the Chinese Ministry of Education and other government departments to build a world-class university with world-class disciplines.

(Hereafter referred to collectively as the "Parties" and individually as "Party".)

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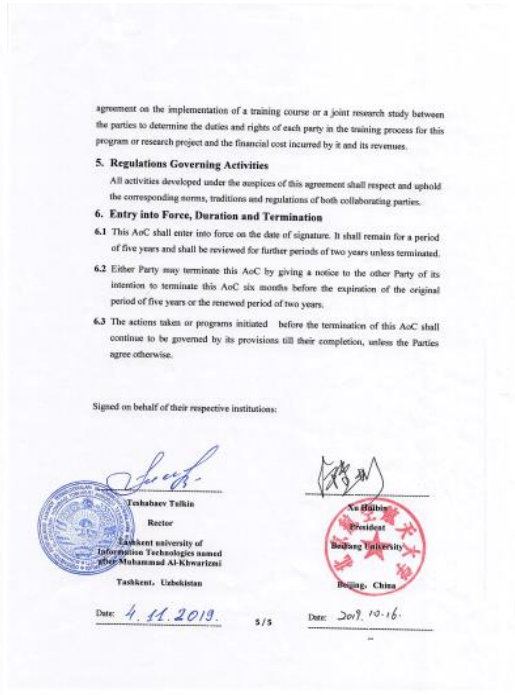

agreement on the implementation of a training course or a joint research study between the parties to determine the duties and rights of each party in the training process for this program or research project and the financial cost incurred by it and its revenues.

5. Regulations Governing Activities

All activities developed under the auspices of this agreement shall respect and uphold the corresponding norms, traditions and regulations of both collaborating parties.

6. Entry into Force, Duration and Termination

6.1 This AoC shall enter into force on the date of signature. It shall remain for a period of five years and shall be reviewed for further periods of two years unless terminated.

6.2 Either Party may terminate this AoC by giving a notice to the other Party of its intention to terminate this AoC six months before the expiration of the original period of five years or the renewed period of two years.

6.3 The actions taken or programs initiated before the termination of this AoC shall continue to be governed by its provisions till their completion, unless the Parties agree otherwise.

Signed on behalf of their respective institutions:

Tashabaev Talkin
Rector
Tashkent university of Information Technologies named after Muhammad Al-Khwarizmi
Tashkent, Uzbekistan
Date: 4.11.2019.

Xu Haibin
President
Beihang University
Beijing, China
Date: 2019.10.16.

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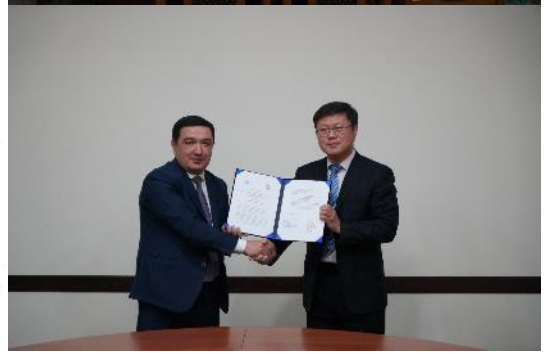


Nov. 3-8, 2019
in Tashkent, Uzbekistan

Agreement of cooperation in research, education and training program with Tashkent University of Information Technologies

02

RCSSTEAP Capacity Building & Outcomes

02 RCSSTEAP Capacity Building & Outcomes

I. RCSSTEAP (China) (Affiliated to the United Nations)

- **Established** on 17 Nov, **2014**
- **Supported** by Committee on the Peaceful Uses of Outer Space (**UN-COPUOS**) and China National Space Administration (**CNSA**)
- **Hosted** by **Beihang University**, China

02 RCSSTEAP Capacity Building & Outcomes

➢ **RCSSTEAP aims to be**

— *an education and training entity supported by UN-COPUOS.*

- **To promote the peaceful use of space technologies for the benefit of humanity.**
- **To sensitize the countries within the region about space science and technology activities by educating and creating awareness through training, workshops, short courses and outreaches.**
- **To facilitate the UN "Space Applications Programme" promoted by UN-COPUOS.**
- **To enhance the education and training level as well as application capacity of space science and technology in the Member States of the Centre through capacity building, information communication, training programs and professional visits.**

RCSSTEAP Capacity Building & Outcomes

II. Development Mode

UGII Mode

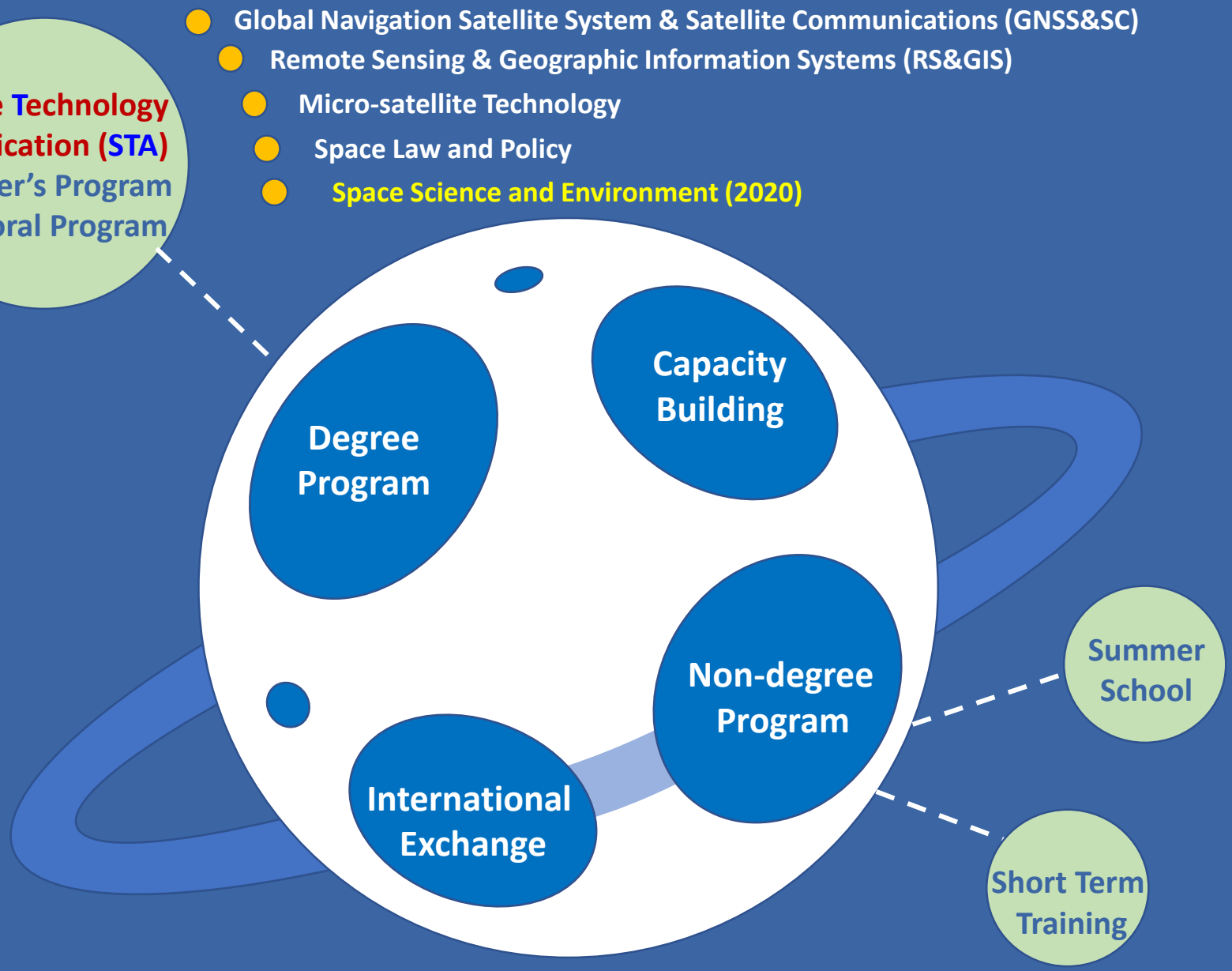
U —— Hosted by University

G —— Supported by Chinese Government

I —— Work with Related International Organizations

I —— Industry/Enterprise Participation

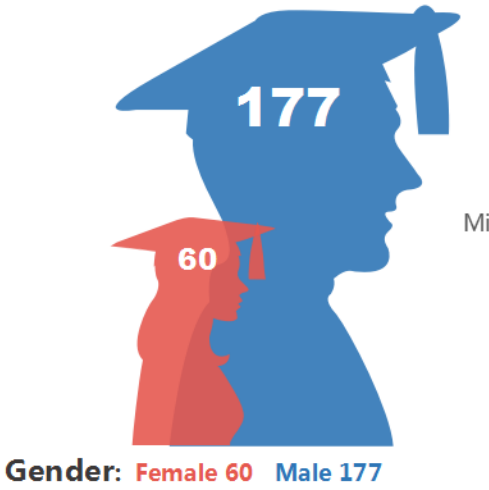
III. Training programs

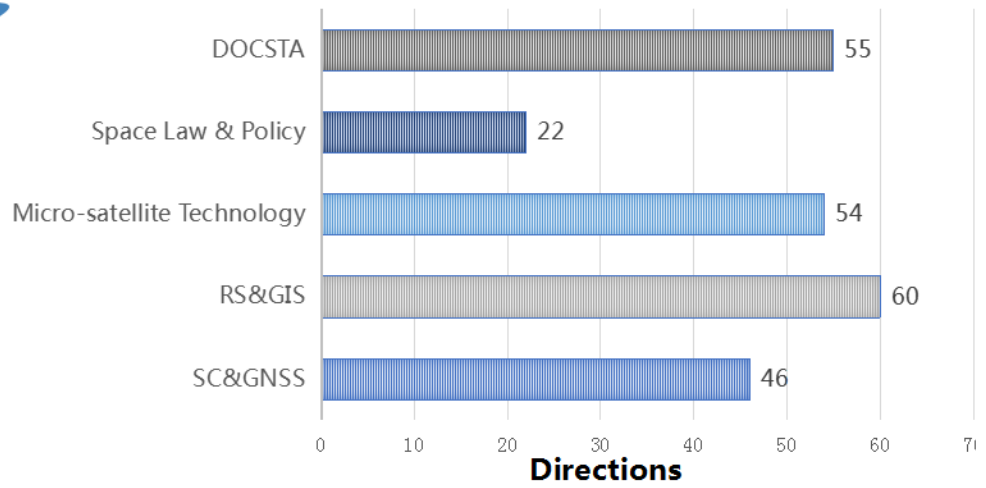


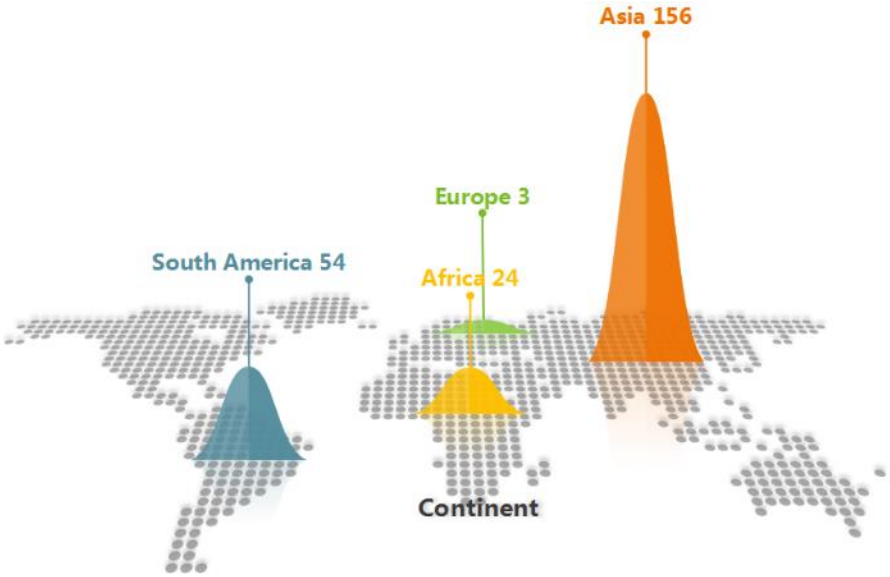
02 RCSSTEAP Capacity Building & Outcomes

➢ Degree programs

MASTA & DOCSTA (2015-2019)







- Totally 237 from 24 countries

02 RCSSTEAP Capacity Building & Outcomes

➢ Short-term Training

Short Training Programmes in 2015

Date	Topic	Number	Countries of Participants
Apr.19-29	Global Navigation Satellite Technology and Application	43	Algeria, Bolivia, Brazil, China, Croatia, Indonesia, Laos, Mongolia, Myanmar, Nigeria, Pakistan, Peru, Slovakia, Thailand, Turkey, Venezuela
Sept.14-22	Remote Sensing Technology and Application	30	Algeria, Bangladesh, Bhutan, Brazil, China, Ethiopia, Indonesia, Iran, Oman, Pakistan, Peru, Mongolia, Mozambique, Myanmar, Nigeria, Saudi Arabia, Singapore, Thailand, Turkey, Venezuela
Sept.17-25	Space Law and Policy	38	Bangladesh, Bolivia, Brazil, China, Egypt, Indonesia, Mongolia, Pakistan, Peru, Thailand, Turkey, Venezuela

Participants in total: 111

02 RCSSTEAP Capacity Building & Outcomes

Short Training Programmes in 2016

Date	Topic	Number	Countries of Participants
Mar. 26-30	China Remote Sensing Technology and Data Applications	46	Algeria, Bangladesh, Bolivia, Brazil, Indonesia, Iran, Laos, Mongolia, Mozambique, Nigeria, Pakistan, Peru, Slovakia, Thailand, Venezuela
May. 8-20	International GNSS Seminars "GNSS Courses for curious minds"	31	Algeria, Bangladesh, Bolivia, Brazil, China, Iran, Mozambique, Nigeria, Pakistan, Peru, Saudi Arabia, Thailand, Venezuela
Jul. 11-30	Beidou Technology and its Applications	37	Cambodia, Egypt, Iran, Iraq, Malaysia, Mongolia, Morocco, Nigeria, Oman, Pakistan, South Africa, Thailand, Uganda, Venezuela, Zambia
Aug. 8-13	Global Navigation Satellite Systems	83	Cameroon, Ghana, Kenya, Libya, Nigeria, Sudan, Tanzania
Sept. 22-27	Space-based Technologies for Flood and Drought Monitoring Risk Assessment	28	Bangladesh, Ghana, Guatemala, India, Iran, Italy, Kyrghyzstan, Mongolia, Mozambique, Nepal, Nigeria, Pakistan, Peru, Sudan, Thailand, Trinidad and Tobago, Turkey, Zimbabwe
Oct. 14-16	The "Belt and Road Initiative" Spatial Information Corridor Engineering Application	45	Algeria, Bangladesh, Bolivia, Brazil, Croatia, Indonesia, Iran, Laos, Mongolia, Nigeria, Pakistan, Peru, Thailand, Turkey, Ukraine, Venezuela
Oct. 31-Nov.8	Navigation and Positioning Satellite System Design	31	Algeria, Bangladesh, China, Indonesia, Iran, Laos, Mongolia, Mozambique, Pakistan, Peru, Thailand, Turkey

Participants in totall: 301

Short Training Programmes in 2017

Date	Topic	Number	Countries of Participants
Feb. 22-24	BeiDou Satellite Navigation Technology	51	Afghanistan, Egypt, Kenya
May 9-11	Remote Sensing Technology and Application	40	Belgium, France, Germany, Italy, Luxembourg, Netherlands
Aug.14-Sept.1	The First Summer Camp of the APSCO Student Small Satellite Project	47	Bangladesh, China, Iran,Mongolia, Pakistan, Peru, Thailand, Turkey
Oct. 25-31	Integration of Multisource Earth Observation Data for Disaster Damage Assessment	46	Bangladesh, China, Fiji, Ghana, India, Indonesia, Iran, Kenya, Mongolia, Mozambique, Myanmar, Nigeria, Pakistan, Peru, Sudan, Thailand, Turkey
Nov. 17-19	China Satellite Service and Big Data Analysis & Application for Remote Sensing	51	Algeria, Bangladesh, Bolivia, Brazil, China (Hong Kong), Iran, Malaysia, Mongolia, Nigeria, Pakistan, Peru, Thailand, Turkey, Venezuela

Participants in total: 235

Short Training Programmes in 2018

Date	Topic	Number	Countries of Participants
Apr. 11-23	GNSS	42	Egypt, Morocco, Tunisia
Apr. 12-26	Space Cooperation for Global Health	43	Bangladesh, Bolivia, Ethiopia, India, Iran, Italy, Madagascar, Mongolia, Nepal, Nigeria, Pakistan, Peru, Philippines, Russia, Tanzania, Venezuela, Zambia
Apr. 23-27	BeiDou / GNSS	35	Algeria, Cameroon, Central African Republic, Morocco, Niger, Senegal, Tunisia
Sep.24-25	BeiDou / GNSS	165	Egypt, Lebanon, Sudan, Zambia
Oct. 22-26	Satellite Technology	32	Morocco, Nigeria, Algeria and other Arab league countries
Oct.28 -Nov.01	Space based technology for emergency response	27	Bangladesh, Brazil, China Ghana, India, Iran, Laos, Mongolia, Mozambique, Pakistan, Peru, Thailand, Turkey, Vietnam

Participants in total: 342

02 RCSSTEAP Capacity Building & Outcomes

Short Training Programmes in 2019

Date	Topic	Number	Countries of Participants
Apr. 1-2	BeiDou/GNSS	48	Algeria, Egypt, Iraq, Mauritania, Tunisia
Sept. 5-10	Space-based Technologies for Disaster Risk Assessmen	28	Algeria, Bangladesh, China, Ethiopia, India, Indonesia, Iran, Mongolia, Nepal, Nigeria, Pakistan, Peru, Thailand, Turkey
Sept. 16-29	Capacity Improvement of Addressing Climate Change through Space Technology	29	Argentina, Bangladesh, Cambodia, Cameroon, Chile, Ecuador, Egypt, Ghana, Kenya, Malaysia, Morocco, Namibia, Senegal, Thailand, Tunisia, Turkey, Zambia
Sept. 24-25	SuperMap Software and Its Applications	23	Algeria, Bangladesh, Bolivia, Mongolia, Pakistan, Peru, Spain, Venezuela

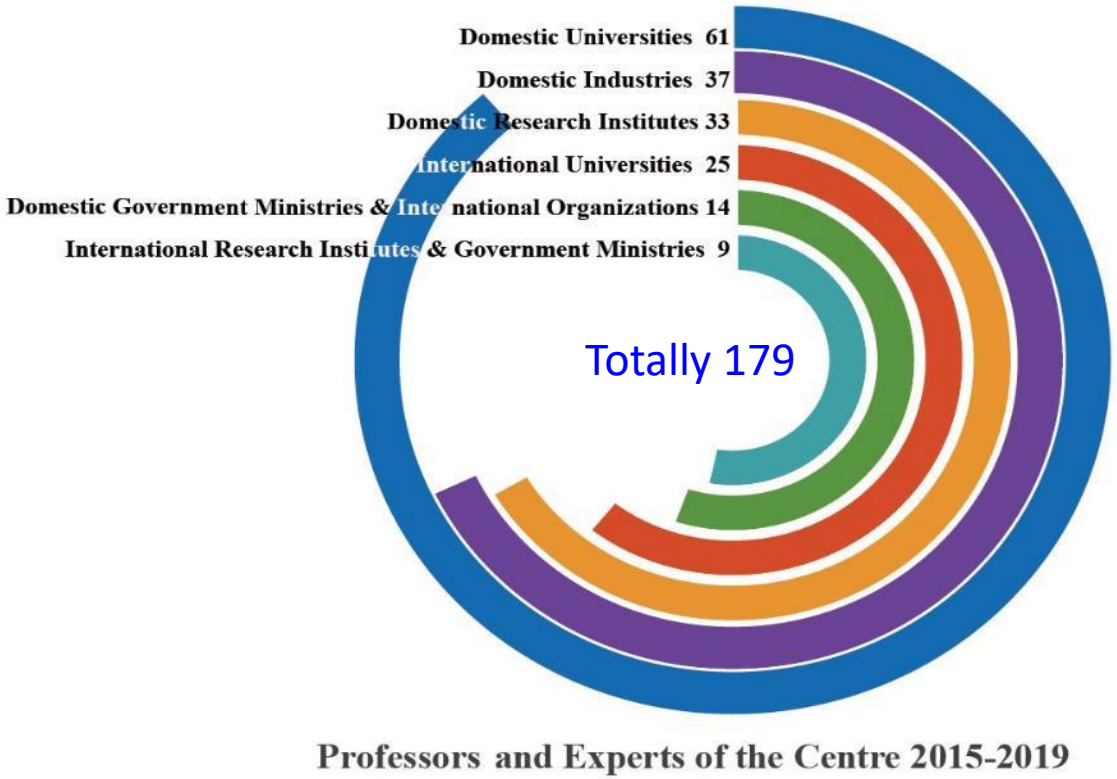
Total: 128 participants from 33 countries

- 2015-2019, more than one thousand participants from 64 countries

RCSSTEAP Capacity Building & Outcomes

IV. Capacity Building

➢ Globalization of Faculty



Professors and Experts of the Centre 2015-2019

Ms. Mazlan Otgman
Former Director of UNOOSA

Mr. Sergio Camacho
Former Director of UNOOSA

Mr. Christophe Macabiau
ENAC, France

Ms. Gabrynowicz
Professor, U.S.A

Mr. Niklas Hedeman
Doctor UNOOSA

Mr. Shirish Ravan
UN-SPIDER Beijing Office

Mr. Yang Yuanxi
Academician of Chinese Academy of Sciences

Mr. Stephan
Hobe University of Cologne, Germany

02 RCSSTEAP Capacity Building & Outcomes

➢ Educational Facilities

02 RCSSTEAP Capacity Building & Outcomes

➢ Research Facilities

Micro-satellite Technology Laboratory

RS Ground Station

BDS Constellation

Distance Education Laboratory

Micro-satellite Mission Control Centre

RS&GIS Laboratory

GNSS Smart Room

Smart Classroom

02 RCSSTEAP Capacity Building & Outcomes

➢ Brand Promotion

The Website of RCSSTEAP

Reception Room of RCSSTEAP

品牌建设

The Online Channel of RCSSTEAP

WEBSITE WECHAT

中心标识主要由橄榄枝、地球仪和北斗星座组成，寓意和平、全球视野、中国特色。
The design elements of the Logo mainly include olive-branch, globe and the Big Dipper (BeiDou in Chinese), symbolizing peace, global vision and Chinese characteristics.

The Newsletters of RCSSTEAP

北京君谦子创意设计有限公司
JUN QIANZI CREATIVE DESIGN CO., LTD

主编/Chief Editor 翁敬农/WENG Jinghong
编辑/Editor 郭媛媛/GUO Yuanyuan 崔意茁/CUI Yizhuo
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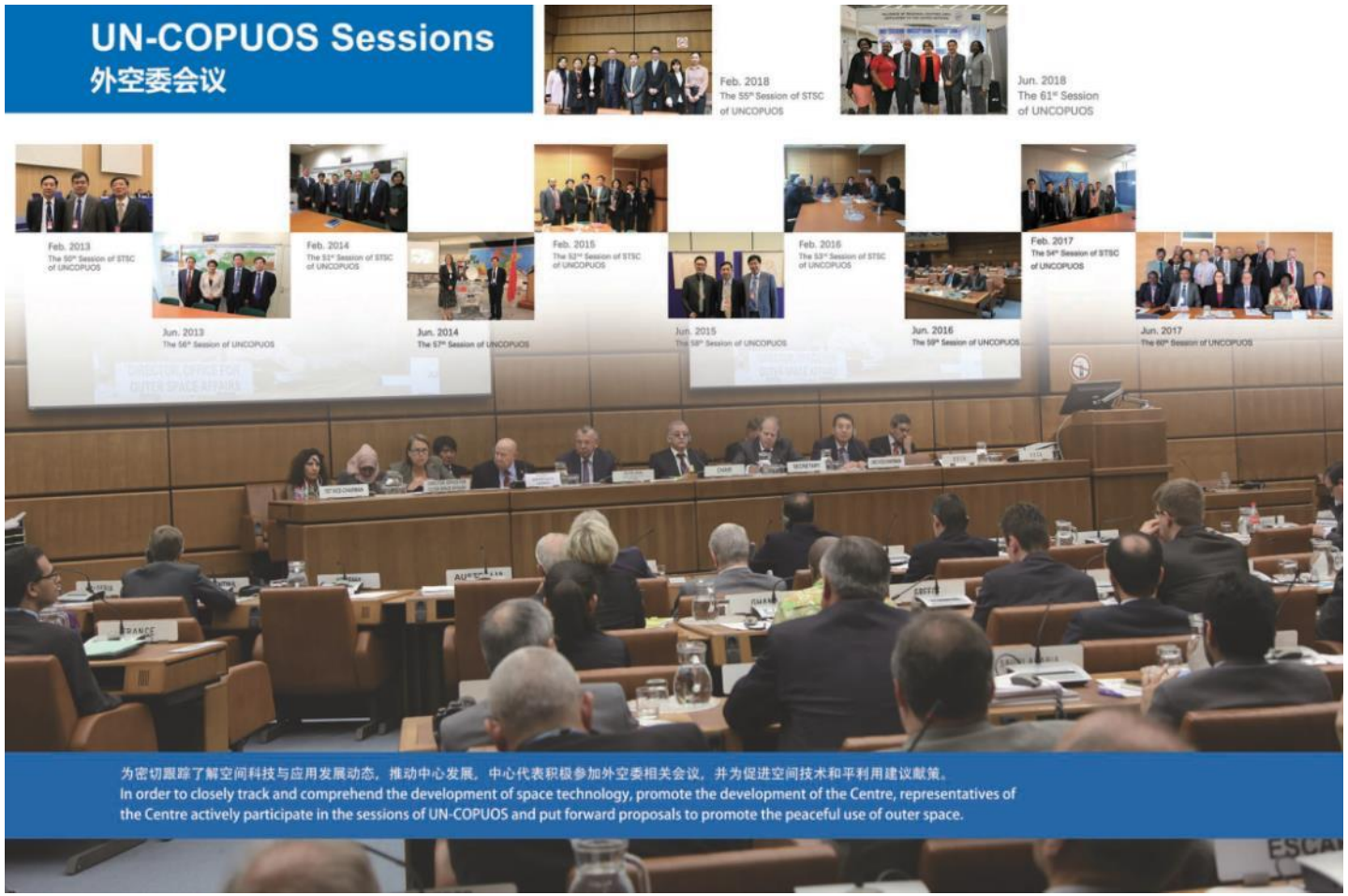
冯 彪/FENG Biao 王宸彦/WANG Chenyan

中心以工作通讯、中心网站和微信公众号在线平台等为载体，不断锤炼品牌形象，提升国际影响力，并为航空航天文化国际化传播服务。
The Centre continuously forges its brand to enlarge international influence by Newsletter, website, and WeChat public platform, etc.

RCSSTEAP Capacity Building & Outcomes

V. International Exchange



02 RCSSTEAP Capacity Building & Outcomes

➢ Alliance of Reginal Centres

02 RCSSTEAP Capacity Building & Outcomes

➢ Aerospace Technology and Culture Journey

Regional Centre for Space Science and Technology Education in Asia and the Pacific (China)

(Affiliated to the United Nations)

联合国附属空间科技教育亚太区域中心（中国）

The 5th Anniversary & International Space Education Forum

December 9, Beijing, China

RCSSTEAP 5th Anniversary

Thanks for your attention and support for BDS!

14th Meeting of the International Committee on Global Navigation Satellite Systems