

### Fly with China Space Station, For Human Common Benefits

Dr. Wang Yuanzhen Director of Utilization & Development Division China Manned Space Agency Dec 4 2018 @ Vienna In 1992, Chinese government approved China's manned space program and made decision on the 'three-step' strategy for its implementation.





The 2nd step: To launch Space Labs to make breakthrough technologies in EVA, R&D, and accommodation of shortterm man-tended utilization on a modest scale



**3rd step: To construct** and operate China's **Space Station to** accommodate long-term man-tended utilization on a large scale



The 1st step: To launch manned spaceships to master basic human space technologies in Earth-orbit crew transportation.



# **Previous Achievements**

- Unmanned spaceflight missions
  - Shenzhou-1, 20 Nov 1999
  - Shenzhou-2, 10 Jan 2001
  - Shenzhou-3, 25 Mar 2002
  - Shenzhou-4, 30 Dec 2002







# Shenzhou-5, 2003,1st manned spaceflight

### Shenzhou-6, 2005, multiple-crew multiple-day

Shenzhou-7, 2008 1st EVA











### Tiangong-1 spaceflight missions





2011, TG-1 Space Lab





2011, SZ-8 docking with TG-1





2012, SZ-9 docking with TG-1 Liu Yang 1st Chinese Female Astronaut 2013, SZ-10 docking with TG-1, Wang Yaping 2nd Chinese Female Astronaut



### Tiangong-2 spaceflight missions

### The Maiden Launch of CZ-7,2016



### TG-2 launch,2016



### **TianZhou-1 flight mission, 2017**



### Shenzhou-11 manned mission, 2017





## **11 Chinese flown astronauts**



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### **Recent Progress of China's human space activities**

Modules:3Inclination: $42^{\circ} \sim 43^{\circ}$ Altitude: $340 \sim 450$  kmOperation time:10 yearsCrew members:3/6

- Cargo transportation
  - Pressurized, semi-pressurized, unpressurized
  - Transport airtight cargo, large extravehicular payloads, experiment platform
  - To be launched by CZ-7
  - At China Wenchang Space Launch Site
- Crew transportation
  - Shenzhou (SZ) Spaceship
  - CZ-2F launch vehicle
  - Crew members: 3
  - Crew rotation: up to 6 months
  - Launch site: Jiuquan
- Station modules
  - To be launched by the CZ-5B
  - At China Wenchang Space Launch Site.
  - Complete construction in 2022











# **Space Science Experiments**

The three modules of CSS will be featured with advanced technologies and equipped with multi-purpose facilities in international standards for space science.

### Space life sciences and biotechnology

- Ecology Science Experiment Rack (ESER)
- Biotechnology Experiment Rack (BER)
- Science Glove-box and Refrigerator Rack (SGRR)

### **Microgravity fluid physics & combustion**

- Fluids Physics Experiment Rack (FPER)
- Two-phase System Experiment Rack (TSER)
- Combustion Experiment Rack (CER)

### Material science in space

- Material Furnace Experiment Rack (MFER)
- Container-less Material Experiment Rack (CMER)

### **Fundamental Physics in Microgravity**

- Cold Atom Experiment Rack (CAER)
- High-precision Time-Frequency Rack (HTFR)

### **Multipurpose Facilities**

- High Micro-gravity Level Rack (HMGR)
- Varying-Gravity Experiment Rack (VGER)
- Modularized Experiment Rack (RACK)



# Human Space Technology Initiative (HSTI)

The Human Space Technology Initiative (HSTI), launched in 2010 by the Office for Outer Space Affairs under the framework of the United Nations Programme on Space Applications, is aimed at involving more countries in activities related to human space flight and space exploration and at increasing the benefit from the outcome of such activities through international cooperation, to make space exploration a truly international effort.

The role of the Initiative in these efforts consists of providing a platform to exchange information, to foster collaboration between partners from spacefaring and non-spacefaring countries and to encourage emerging and developing countries to take part in space research and to benefit from space applications.



Download Brochure (ST/SPACE/62/Rev.2, Aug 2015) >

#### LATEST INFORMATION

- Announcement of Opportunity for 4th round of KiboCUBE is OPEN!! [Application deadline: 31 January 2019]
- The 1st Announcement of Opportunity for Space Experiment on board China Space Station [ Application deadline: 3 September 2018]
- United Nations Expert Meeting on Human Space Technology: "Providing Access to Space" [Application deadline: 15 July 2018]
- Call For Interest: Space orbital Mission [Deadline 15 November]
- Announcement of Opportunity for KiboCUBE [Third round applications now open until 31 March 2018!!]
- Zero-Gravity Instrument Project (ZGIP) [Extra round applications: open deadline!!]
- Fellowship Programme "Drop Tower Experiment Series (DropTES)" [OPEN NOW!!]









#### United Nations/China Workshop on Human Space Technology

中国载人航天

Beijing, China 16-20 September 2013

### Programme

Organized jointly by United Nations Office for Outer Space Affairs and China Manned Space Agency

> Co-organized by International Academy of Astronautics

> > Hosted by China Manned Space Agency







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中国载人航天工程网



UNITED NATIONS Office for Outer Space Affairs

**China Manned Space Agency** 



# **Cooperation with UNOOSA**

## **Framework Agreement**

to the date of termination under this Agreement or legal instrument executed pursuant to this Agreement.

This Agreement shall enter into force upon signature.

IN WITNESS WHEREOF, the duly authorized representatives of the Parties affix their signatures on the present Agreement in the English language in two originals.

Done at Vienna, Austriathis 31 March (place)

(day / month) (year)

For the United Nations

For the China Manned Space Agency

of 2016

Ms. Simonetta Di Pipp Director Office for Outer Sp United Nations Offi

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Mr. WANG Zhaoyao

Director General China Manned Space Agency

## **Funding Agreement**

Article XIII

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed the present Agreement in the English language in two originals.

DONE at Vienna, Austriathis 31 March of 2016

(place)

(day / month) (year)

For the United Nations

For the China Manned Space Agency

Ms. Simonetta Di Pippo S OFFICE Director Office for Outer Space

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Mr. WANG Zhaoyao

Director General China Manned Space Agency







# **Objectives of the Cooperation**

- Under the Agreements, CMSA will provide opportunities to use infrastructures and resources of China's Space Station, and funding support to UNOOSA.
- Both parties will work together for the following purposes:
  - To continue implementing the Human Space Technology Initiative (HSTI);
  - To provide opportunities for Member States to conduct space experiments on board China's Space Station;
  - To provide opportunities for Member States to fly their astronauts/payload experts on board China's Space Station.





UNITED NATIONS Office for Outer Space Affairs



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Our Work > Programme on Space Applications > Human Space Technology Initiative (HSTI) > Orbital Opportunities > China Space Station

# The United Nations/China Cooperation on the Utilization of the China Space Station

## The First Announcement of Opportunity for Space Experiments on-board China Space Station

APPLY BY DOWNLOADING, COMPLETING AND SUBMITTING THE APPLICATION FORM.

DEADLINE EXTENDED BY ONE MONTH TO 30 SEPTEMBER 2018

### DEADLINE EXTENSION NOTICE

Dear applicants,

Upon request from potential applicants, in order to provide enough time for you to prepare applications in response to this 1st Announcement of Opportunity (AO) for flying your space experiments on-board the China Space Station (CSS), the United Nations Office for Outer Space Affairs (UNOOSA) and the China Manned Space Agency (CMSA) have decided to extend the AO deadline by one month to **30 September 2018** for the international space community and all United Nations Member States to submit their applications. Please note that neither UNOOSA nor CMSA have authorized any third party to solicitate applications through the third party, and that the only authoritative source to call for and solicitate applications from the international community and all United Nations Member States for flying

## **International Cooperation** concerning

## **Utilization of China Space Station**





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Others

## **Cooperation areas**

- Collaborative development of devices, components, subsystems, modules
  - Space science experiments and utilization onboard Station
- Astronaut selection / training / flight
- Spinoff of human space technology

Initiative (HSTI) UN **Member** States

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UNITED NATIONS Office for Outer Space Affairs

Human Space Technology

**Principles:** 

Equality and mutual

Joint development

Peaceful use of

outer space

benefit

## **Advance Research for Future's Human Spaceflight Mission**















# Thanks for your attention!

