



China Manned Space Programme

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Content

- Introduction to development strategy
- Achievements up to date
- China's space station and its latest development
- International cooperation
- Conclusion



Part I: Development strategy

- In 1992, the Chinese government approved the launch of China's manned space programme
- Formulated the “three-step strategy” to implement the Programme





Three-step strategy

3rd step: To construct China's space station to accommodate long-term man-tended utilization on a large scale



The 2nd step: To launch space labs to make technological breakthrough in EVA, R&D, and accommodation of long-term man-tended utilization on a modest scale



The 1st step: To launch manned spaceships to master the basic human space technology

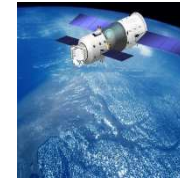


Part II: Achievements up to date

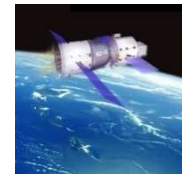
- Unmanned spaceflight missions
 - SZ-1, 20 Nov 1999, 1st unmanned spaceflight
 - SZ-2, 10 Jan 2001, 2nd unmanned spaceflight
 - SZ-3, 25 Mar 2002, 3rd unmanned spaceflight
 - SZ-4, 30 Dec 2002, 4th unmanned spaceflight



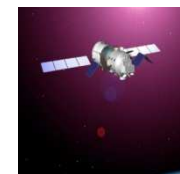
SZ-1



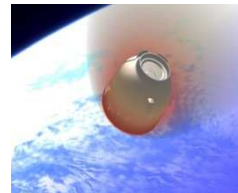
SZ-2



SZ-3



SZ-4



- Achieved goals:
 - Laying a solid foundation for manned missions



- Manned spaceflight missions – **Basic Human Spaceflights**



Shenzhou-5, 2003, 1st manned spaceflight mission



Shenzhou-6, 2005, 1st multiple-crew and multiple-day spaceflight mission

- Achieved goals:
 - Fulfilled the task of the 1st step of the three-step strategy



- Manned spaceflight missions – **Space Walk**



Shenzhou-7, 2008, 1st Extravehicular Activity (EVA)



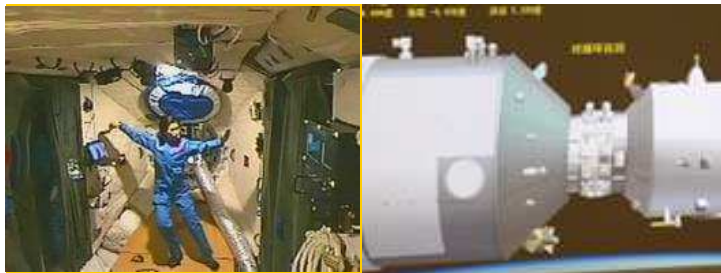
- Manned spaceflight missions – **Rendezvous & Docking**



2011, TG-1 Space Lab



2011, SZ-8 docking with TG-1



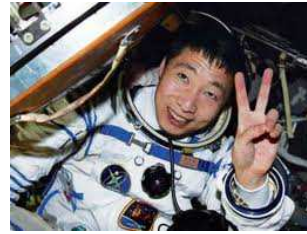
2012, SZ-9 docking with TG-1,
1st Chinese Female Astronaut,
LIU Yang



2013, SZ-10 docking with TG-1,
2nd Chinese Female Astronaut,
WANG Yaping, Space class

6 Rendezvous and Docking Missions in total

China Manned Space Agency (CMSA)



YANG Liwei

SZ-5, 15 Oct 2003



FEI Junlong
SZ-6, 12 Oct 2005



NIE Haisheng



ZHAI Zhigang



LIU Boming

SZ-7, EVA, 25 Sep 2008



JING Haipeng



JING Haipeng

SZ-9, Manual RVD with TG-1 , 16 Jun 2012



LIU Yang



LIU Wang



NIE Haisheng,

SZ-10, Manual RVD with TG-1, 11 Jun 2013



WANG Yaping



ZHANG Xiaoguang

So far, China has carried out 11 spaceflight missions in total, 5 of which were manned missions, sending 10 Chinese astronauts into space and returning them safely.



Part III: China's Space Station Project and its Progress

- China's manned space programme has comprehensively entered into the stage of Space Station construction.

- The construction is well under way following the two-phase plan:
 - **Phase 1: Space lab**
 - **Phase 2: Space station**



■ Phase 1: Space Lab

– Missions:

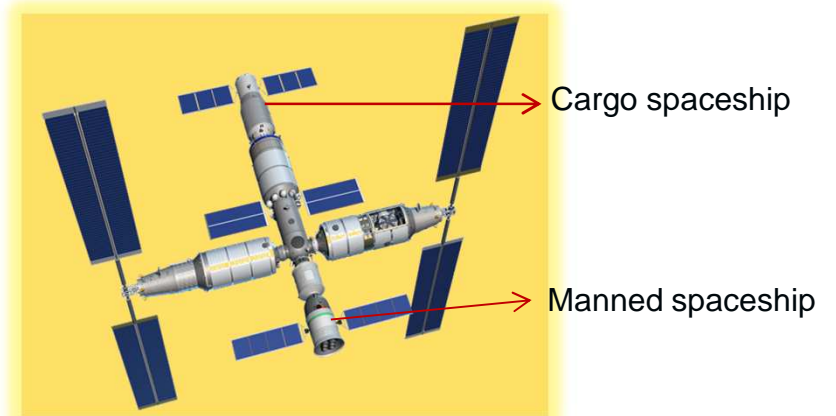
- To launch Tiangong-2 space lab, a manned spaceship, a cargo spaceship
- To conduct rendezvous and docking missions
- To master key technologies including on-orbit propellant re-entry
- To prepare for the construction of the Space Station

– Progress/plan:

- In 2014, the newly built Hainan Launch Site witnessed a successful ground drill for CZ-7 carrier rocket to launch the cargo spaceship.
- In 2016, the first space flight experiment of CZ-7 carrier rocket will be performed.
- Afterwards, subsequent planned flight missions will follow.



- **Phase 2: Space Station**
- Design specification
 - Three modules, ymmetrically T-shaped
 - Inclination: 42° ~ 43°
 - Altitude: 340~450 km
 - Lifetime: 10 years
 - Crew members: 3, a maximum of 6 for rotation



- Core module
 - Control and manage the complex
 - Provide accommodation and working place for astronauts

- Experiment module I and II
 - Space science experiments
 - Space applications
 - Space technology demonstration



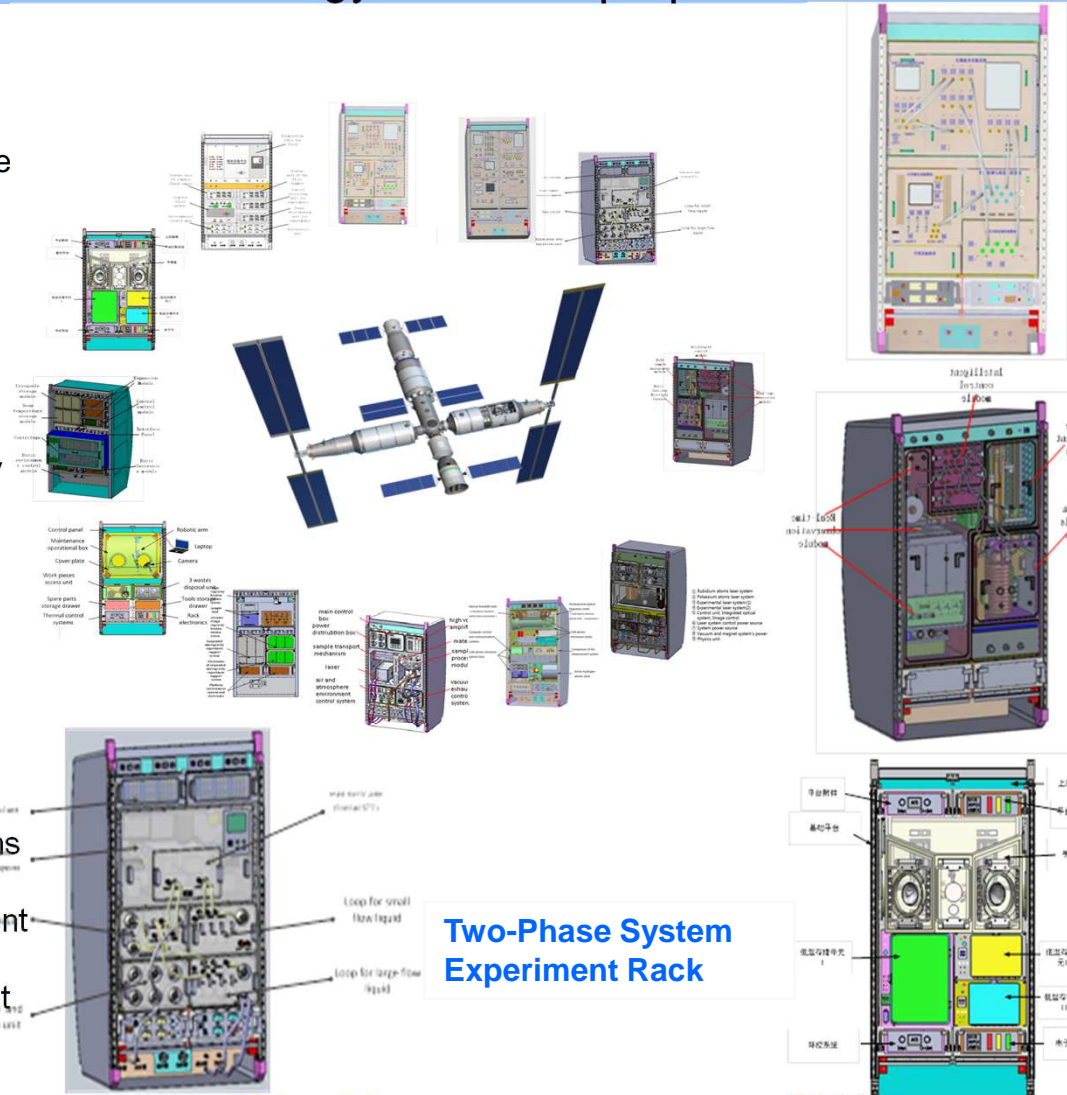
Station Expansion Capability

- According to future requirements for utilization and international cooperation, newly built modules can be added, and aboard payloads can be exchanged.
- Lifetime of the Station can be extended through proper maintenance and repair.



■ The three modules of China's Space Station are all designed to feature advanced technology and multi-purpose facilities:

- Space medicine
- Space life science and biology
- Microgravity fluid physics
- Combustion science
- Fundamental physics
- Space astronomy and astrophysics
- Space earth science and technology
- Space new technology
- Space based information technology
- Space applications new technology
- Space environment and physics
- Space component and parts



Biotechnology Experiment Rack

Material Science Experiment Rack

Two-Phase System Experiment Rack

Science Glove-box and Cold Storage Rack



- Station modules

- To be launched by the CZ-5B
- At Hainan Space Launch Site.



- Cargo spaceships

- Pressurized, semi-pressurized, unpressurized
- To transport airtight cargo, large extravehicular payloads, experiment platform
- To be launched by CZ-7
- At Hainan Space Launch Site



- Crew transportation

- Shenzhou(SZ) Spaceship
- CZ-2F launch vehicle
- Crew members: 3
- Crew rotation: up to 6 months
- Launch site: Jiuquan



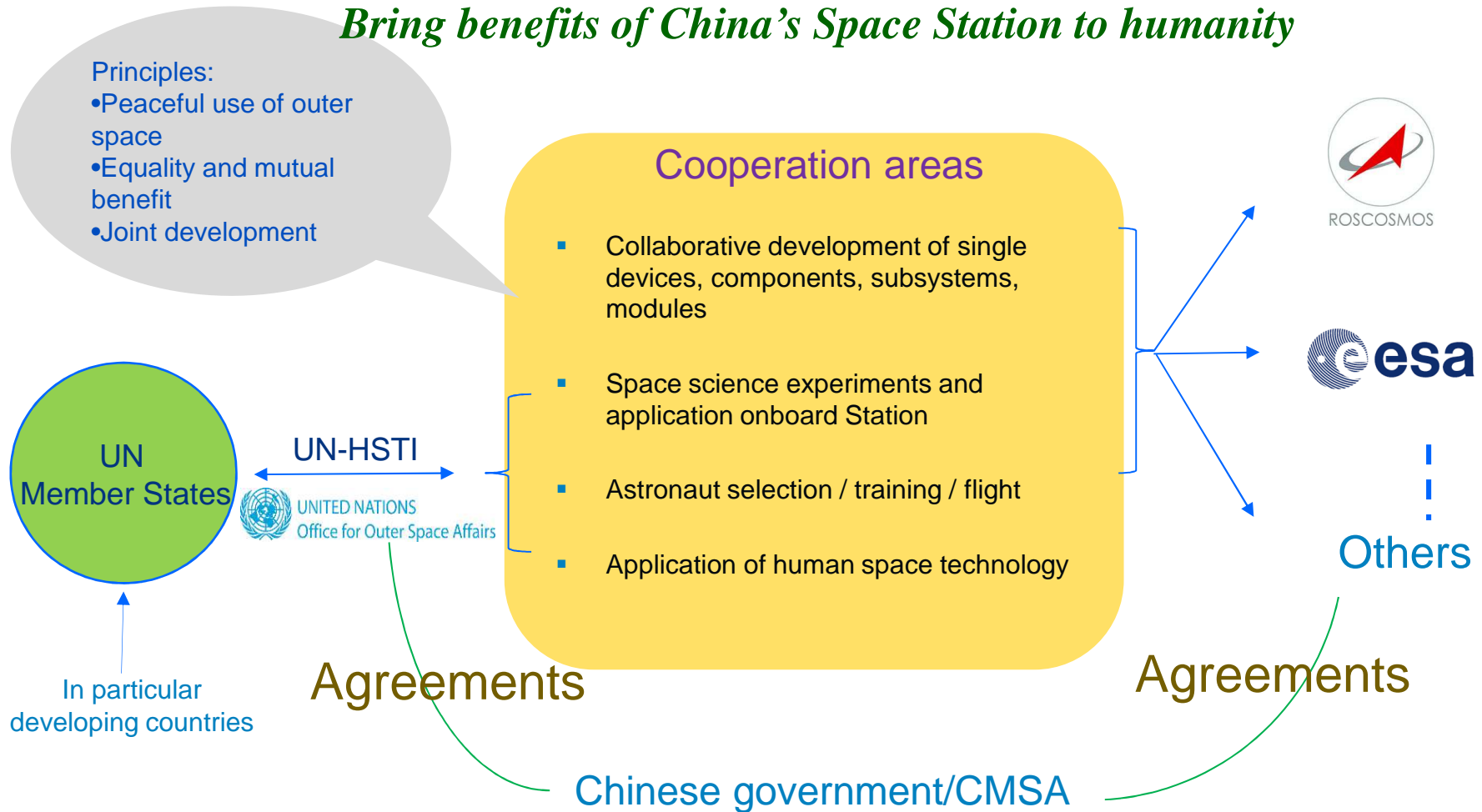


- **Space Station construction plan**
 - Currently, China's Space Station project is well under way
 - The modules of the Station and new types of launch vehicles as well as other related facilities are under development
 - The Core Module is scheduled to be launched in 2018
 - The Experiment Module I and II will follow afterwards
 - The Station will be put into operation around 2022



Part IV: International cooperation

Bring benefits of China's Space Station to humanity





Conclusion

- China's Space Station will provide a reliable and expandable microgravity platform for space science and technology research and applications.
- CMSA is considering further and long-term development in human space exploration after the forthcoming accomplishment of the present three-step strategy,
- It is certain that China will never halt its footsteps in human space exploration and will continue to explore the vast space, deeper and further!





Thank you for your kind attention !

Website: en.cmse.gov.cn