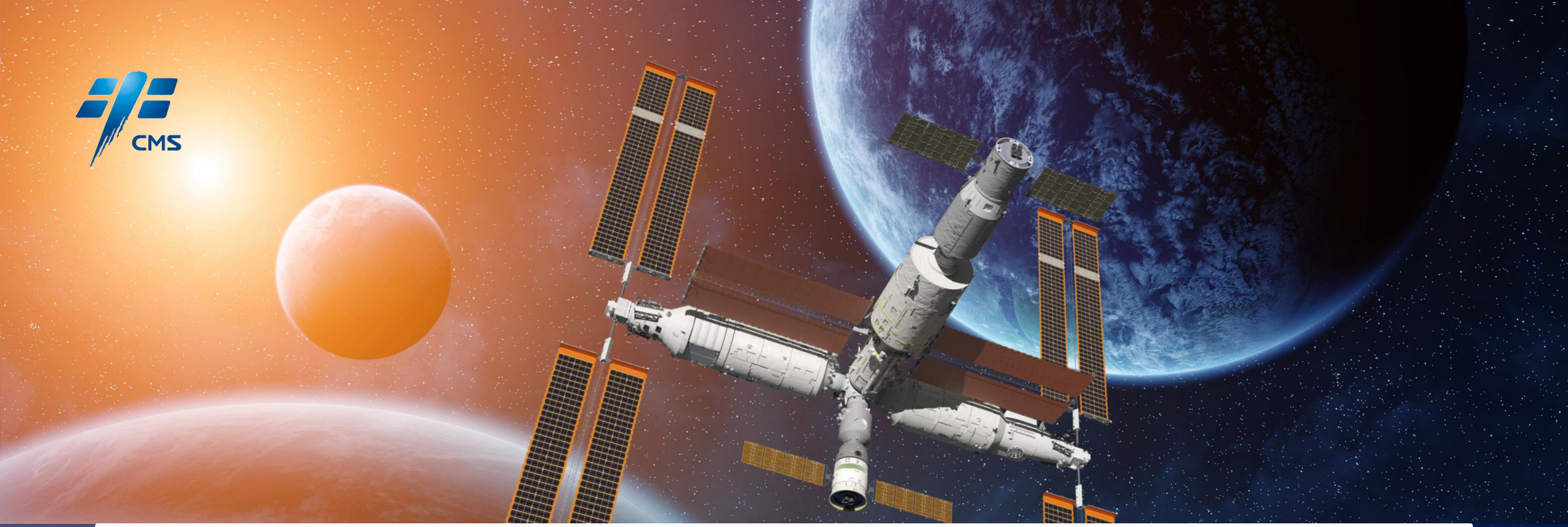
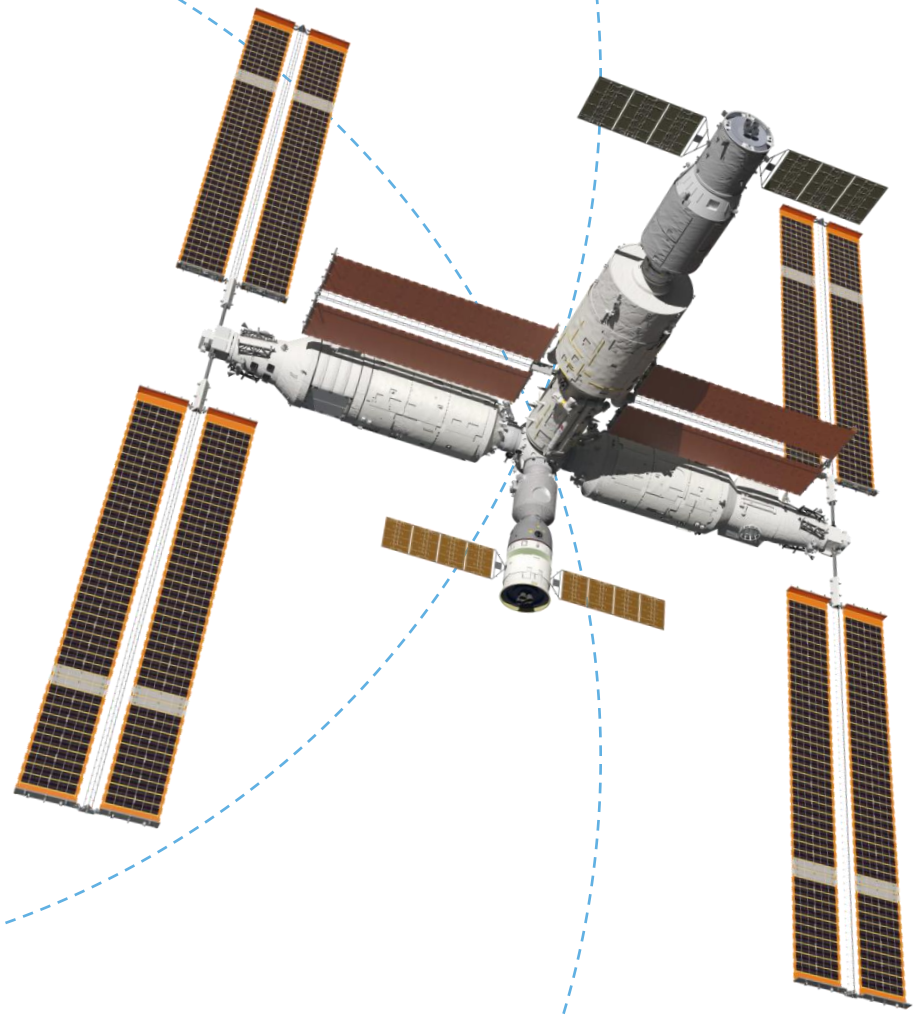


Progress of Chinese Space Station (CSS)

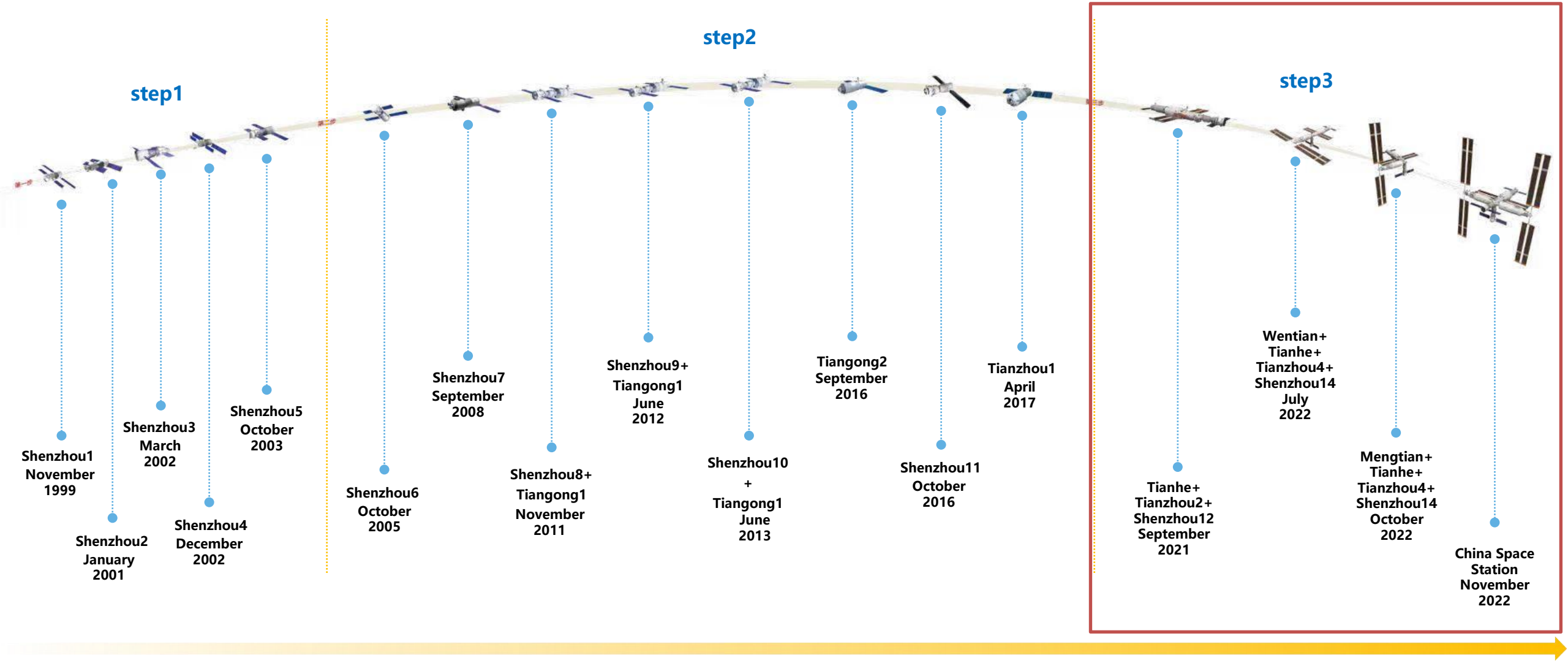
Lu Yaofeng / Deputy Director
Integrated Planning Division
China Manned Space Agency (CMSA)

May, 2023



Program Overview

China Manned Space Agency (CMSA)

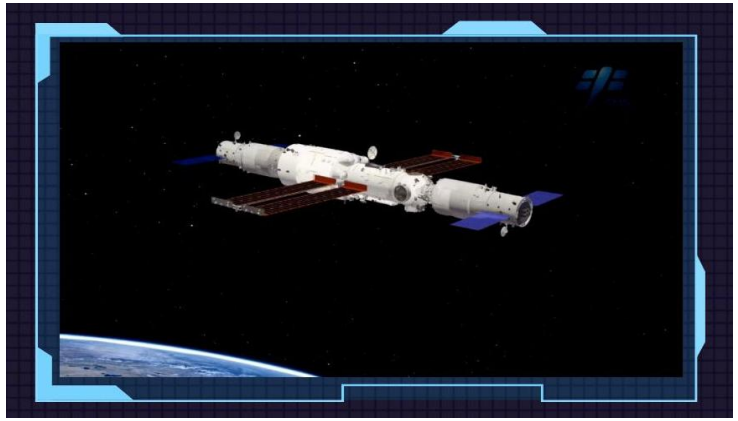


CSS Construction Progress

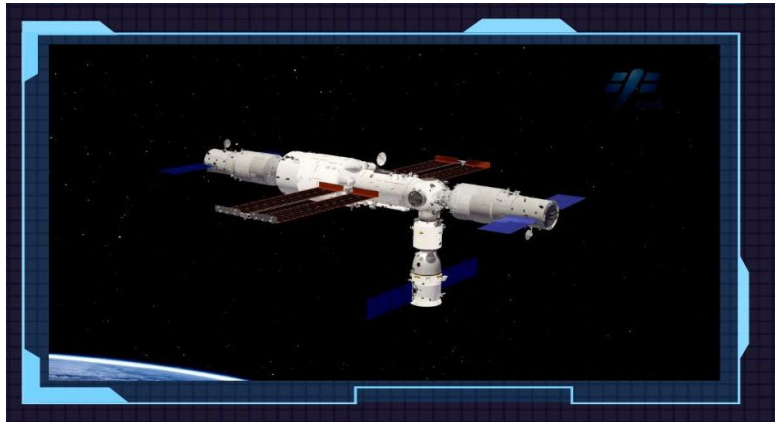
config.1 Tianhe core module(2021.4.29)

config.2 Tianhe+Tianzhou2(2021.5.30)

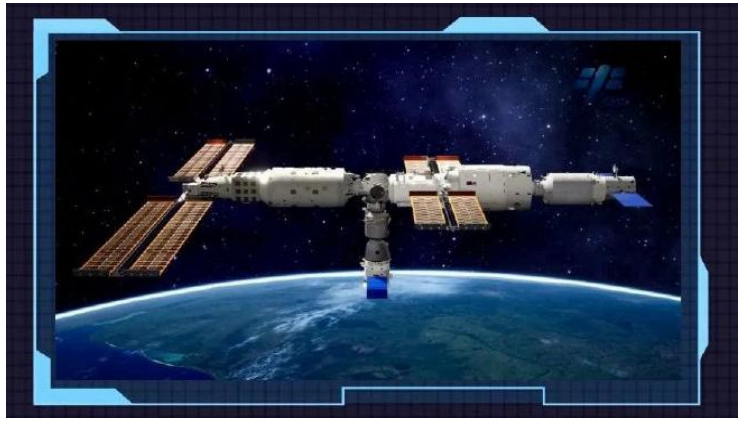
config.3 Tianhe+Shenzhou12+Tianzhou2(2021.6.17)



config.4 Tianhe+Tianzhou2+Tianzhou3(2021.9.20)



config.5 Tianhe+Shenzhou13+Tianzhou2+Tianzhou3(2021.10.16)



config.6 Tianhe+Wentian+Shenzhou14+Tianzhou4，I shape (2022.7.25)

CSS Construction Progress

config.7
Tianhe+Wentian+Shenzhou14+Tianzhou4，L shape (2022.9.30)

config.8
Tianhe+Wentian+Mengtian+Shenzhou14+Tianzhou4，├ shape (2022.11.1)

config.9
Tianhe+Wentian+Mengtian+Shenzhou14+Tianzhou4，T shape (2022.11.3)

CSS Construction Progress

The "Three Step" Development Strategy of Human Space Program has been transferred from concept to reality.

Shenzhou spacecraft launched

Module launched

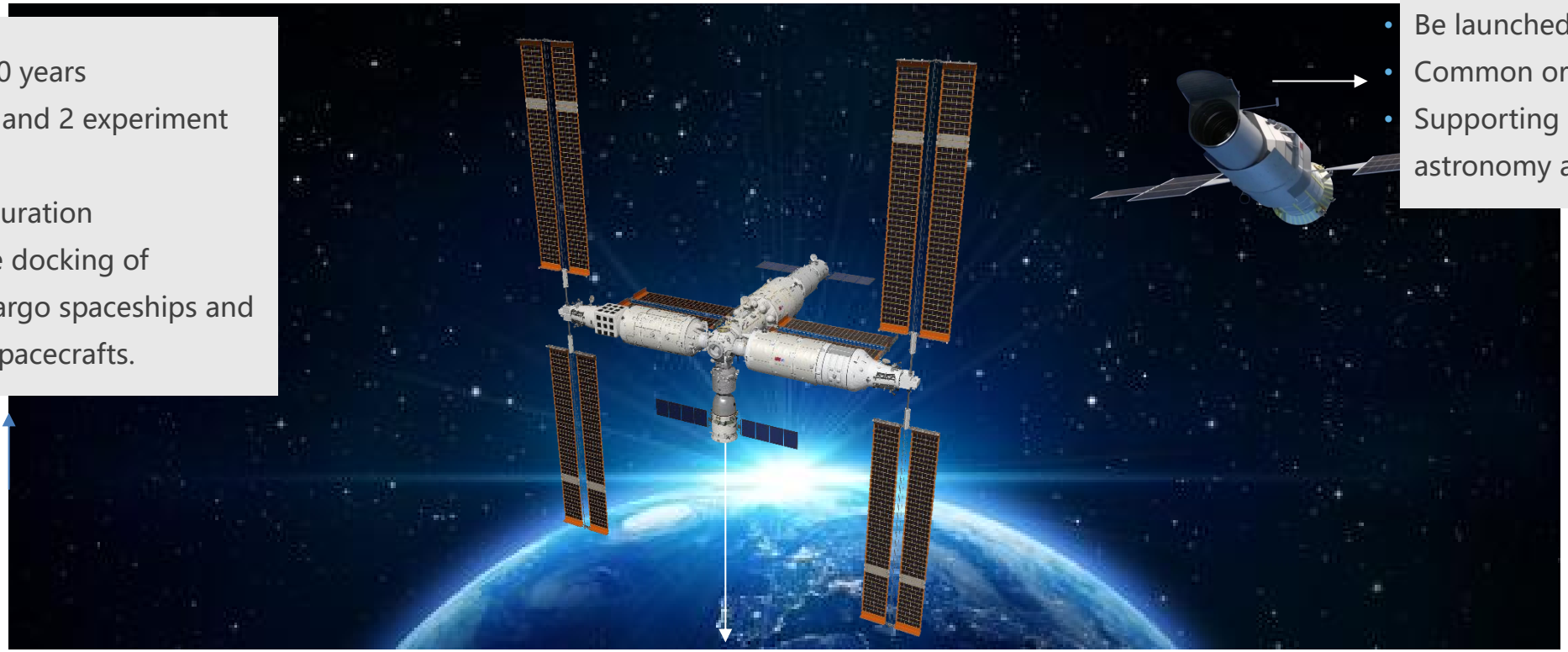
Tianzhou spacecraft launched

CSS Construction Progress

/ Introduction of CSS construction

China Manned Space Agency (CMSA)

- lifespan over 10 years
- 1 core module and 2 experiment modules
- T-shape configuration
- Supporting the docking of manned and cargo spaceships and other visiting spacecrafts.



- XunTian optical telescope
- Be launched separately
- Common orbit flight with CSS
- Supporting research in space astronomy and related fields.

- 3 crews, temporarily 6 during crew handover,
- > 90 tons
- support large scale space science experiments with man-tending on a long-term basis.

CSS Construction Progress

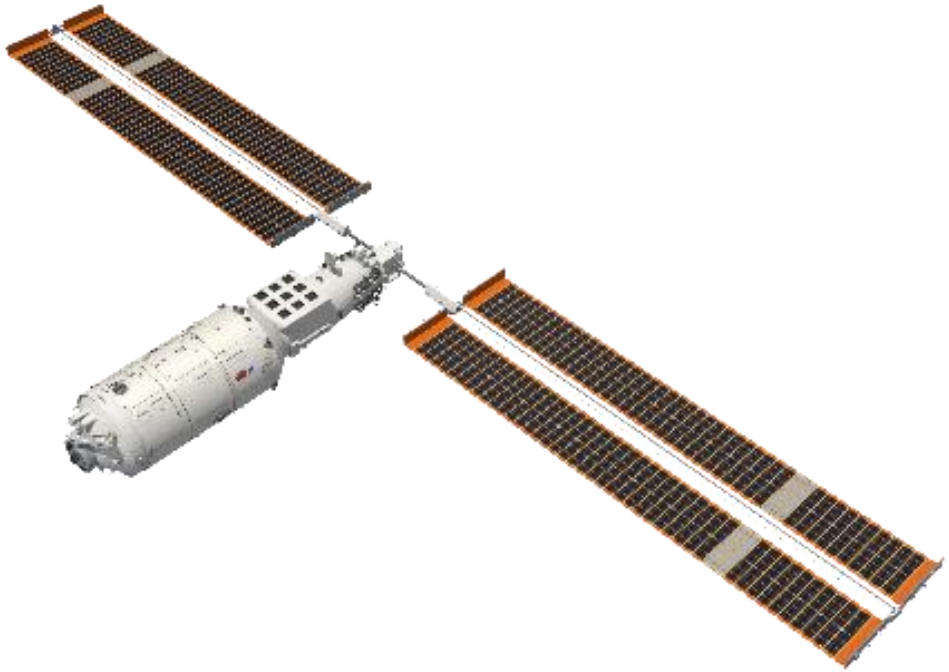
Tianhe core module

- 16.6m in axial length
- 4.2m in maximum diameter
- 28.4m in solar wing span
- the management and control center
- a large robotic arm
- node compartmen

CSS Construction Progress

Wen Tian experimental module

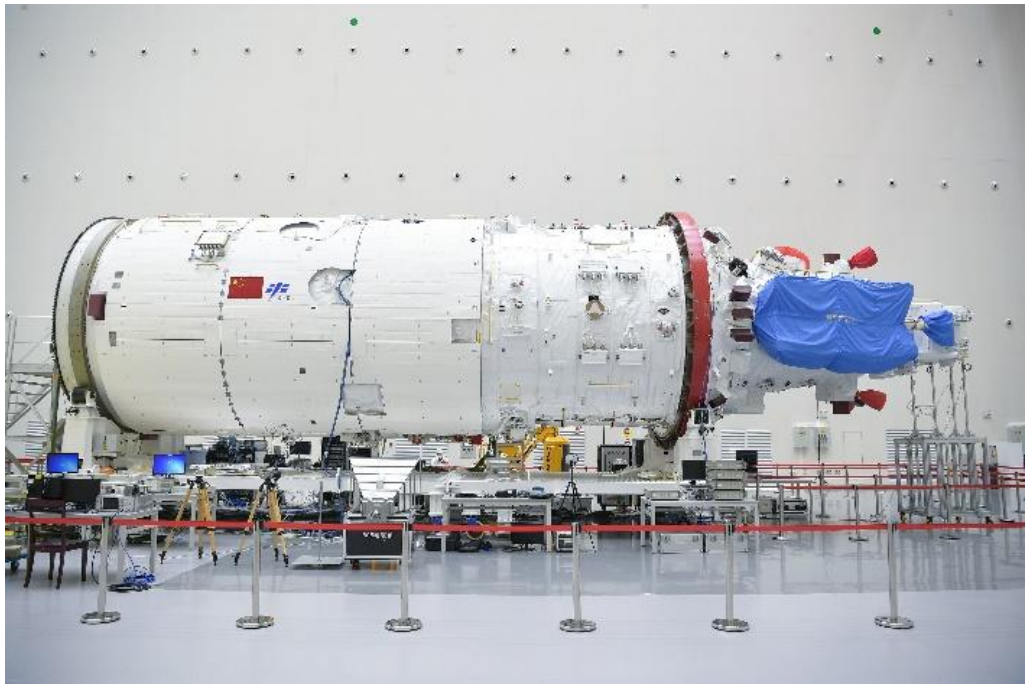
- 17.95m in axial length
- 4.2m in maximum diameter
- 55.7m in solar wing span
- primary airlock module
- a small robotic arm

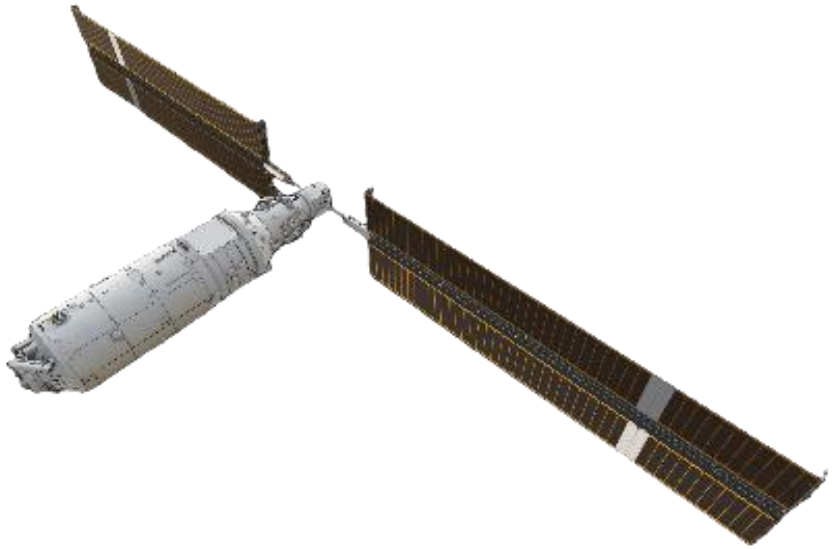


CSS Construction Progress

Meng Tian experimental module

- 17.88m in axial length
- 4.2m in maximum diameter
- 55.7m in solar wing span
- cargo airlock compartments





International Cooperation

/ Overall International Cooperation

Principles:

- Peaceful use of outer space
- Equality and mutual benefit
- Joint development

Cooperation areas:

- Development of devices, components, subsystems, modules
- Space science experiments onboard Station
- Astronaut selection / training / flight
- Application of human space technology

International organizations

UNITED NATIONS Office for Outer Space Affairs

esa

Space Agencies

ROSCOSMOS

cnes CENTRE NATIONAL D'ÉTUDES SPATIALES

DLR

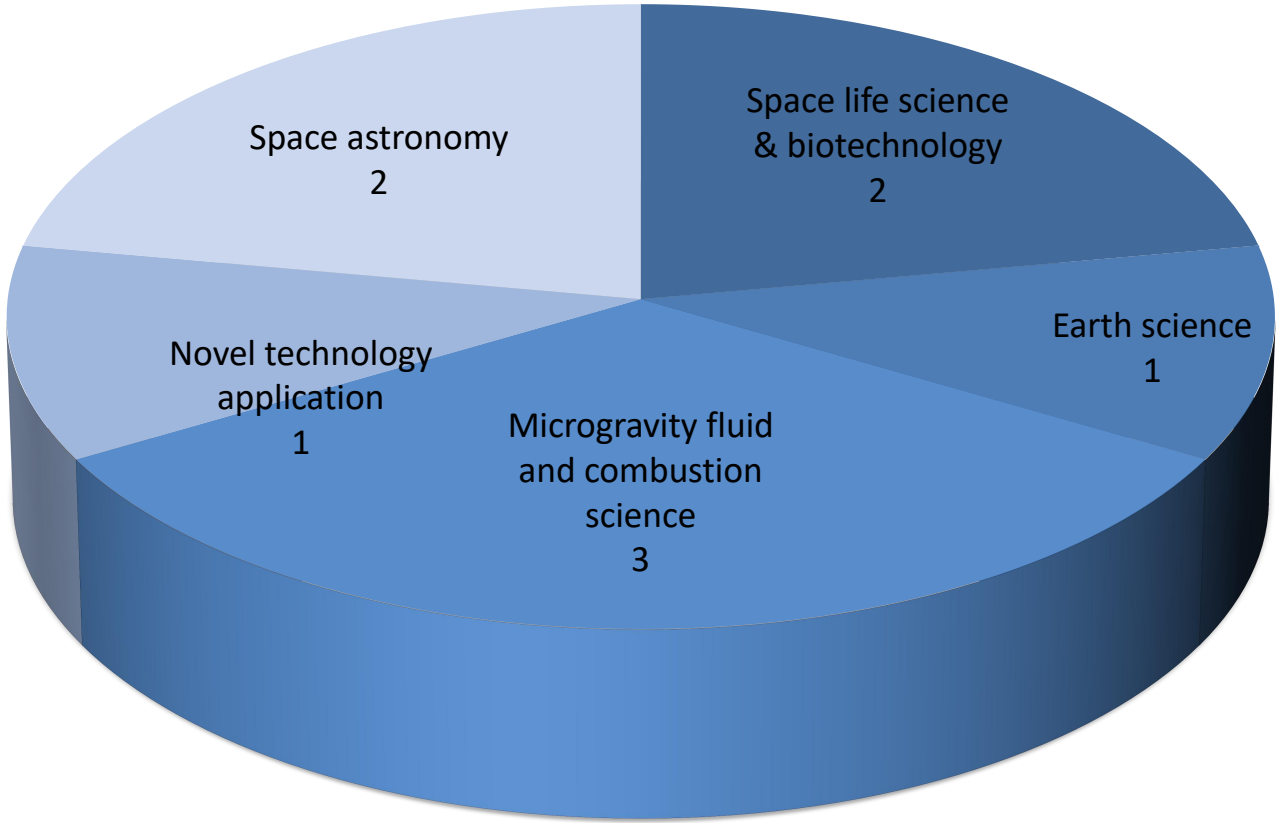
SUPARCO

asi agenzia spaziale italiana

International Cooperation

/ Overview of cooperation with UNOOSA

9 projects from 17 countries and 23 entities were selected, indicating a new stage of international cooperation of CSS.



International Cooperation

/ Overview of cooperation with ESA

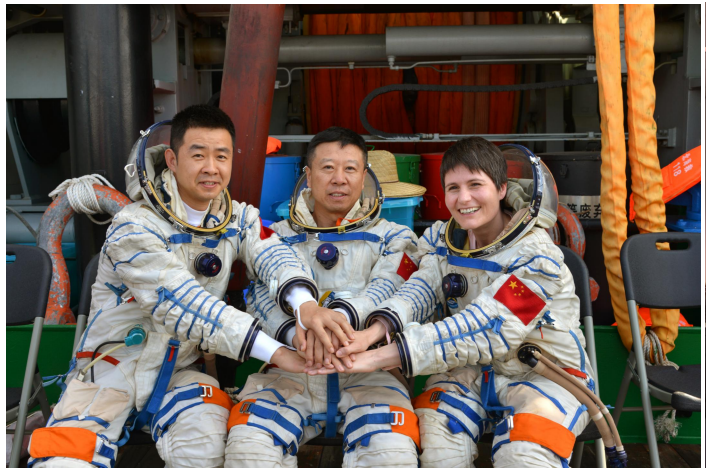
Joint Committee

Co-chaired by both DGs of CMSA and ESA

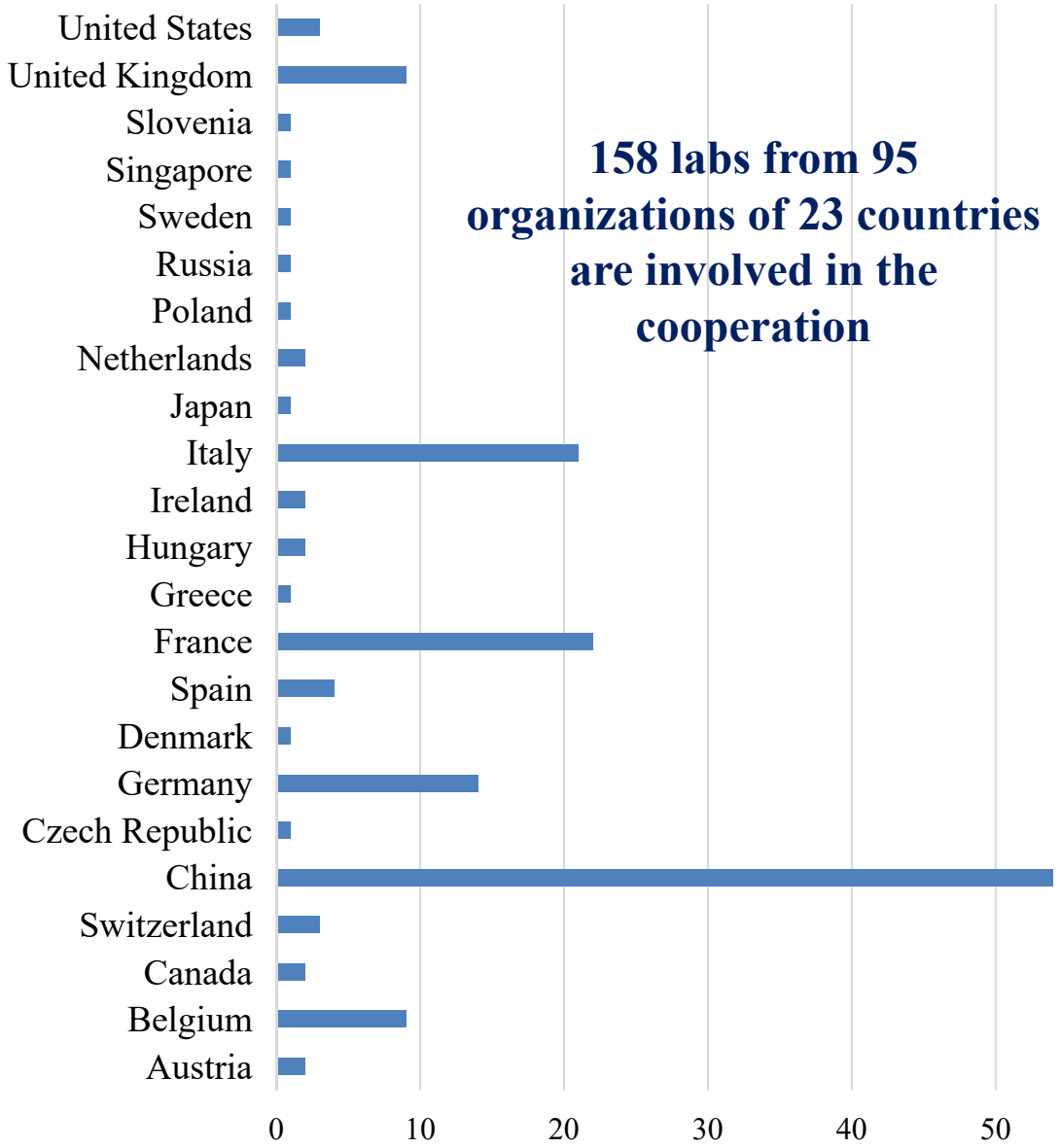
Astronaut Operation

Space Scientific Experiment & Utilization

Space Infrastructure



Team Composition

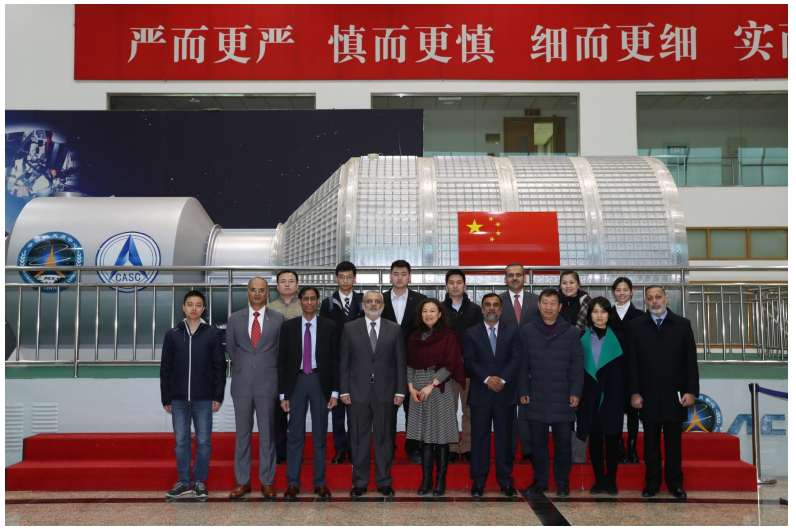


158 labs from 95 organizations of 23 countries are involved in the cooperation

International Cooperation

/ Overview of cooperation with Pakistan

- A bilateral inter-agency cooperation agreement in 2019
- China-Pakistan Joint Committee for Human Space Cooperation
- cooperation in three areas:
  - space science and technology experiments
  - astronaut selection, training and flight
  - applications and achievements in human space science



International Cooperation

/ Overview of cooperation with RKA

cooperation focused on three areas:

- joint experiments in the Russian module of the International Space Station
- collaborate in the China Space Station and human space programs of Russia;
- and exploration on potential cooperation directions and methods in the field of manned lunar exploration and deep space exploration

International Cooperation

/ Overview of cooperation with Italian

- an inter-agency cooperation framework agreement
- two joint working groups
- technical exchanges related to space science experiment cooperation projects

International Cooperation

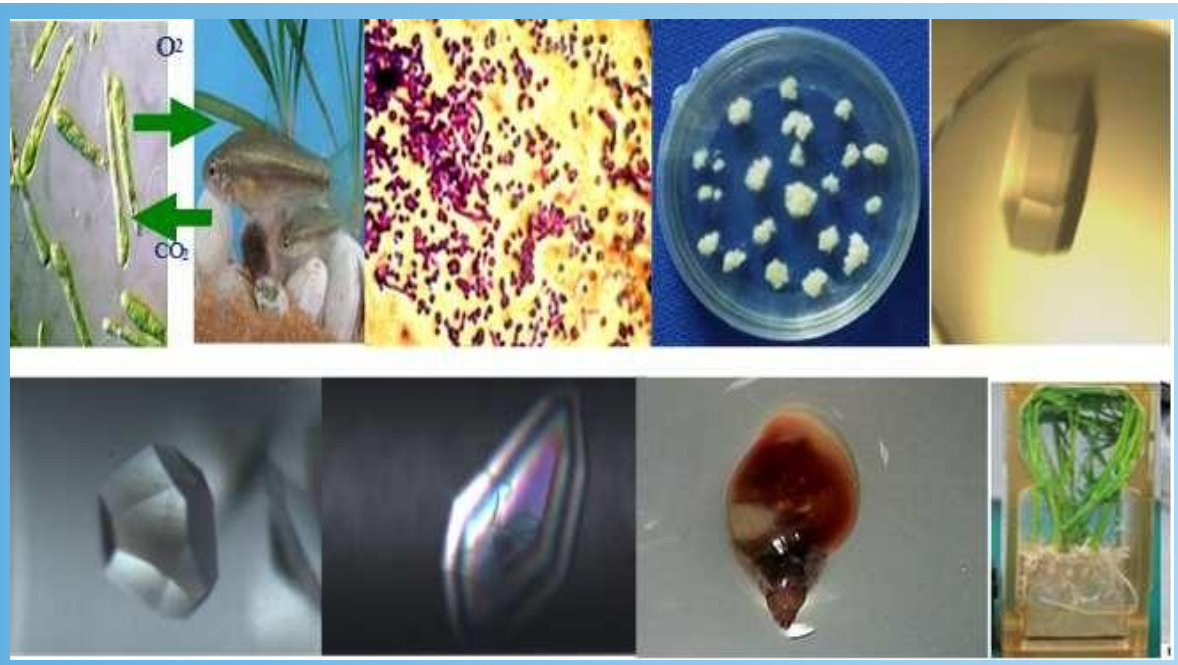
/ Overview of cooperation with German \ French

- Collaborating with the German Space Agency with preliminary exchanges in four fields, such as space life sciences and biotechnology.
- Collaborating with French Space Research Center. The two sides have revised intergovernmental space cooperation agreement by incorporating human space into inter-government cooperation

International Cooperation Capacities

The first area is to collaborate on scientific research around space station applications.

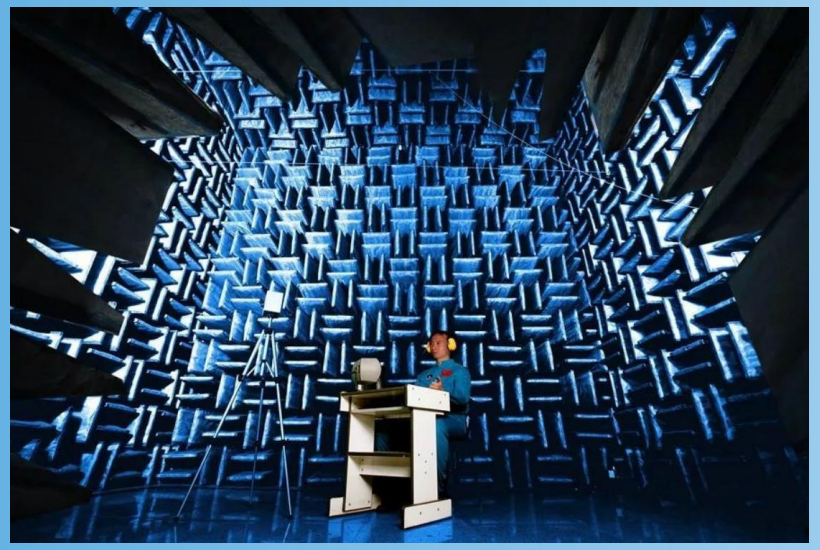
- 25 scientific experiment racks onboard,
- extravehicular payloads docking positions and exposure platforms
- scientific research facilities such as the XunTian Space Telescope.
- 1000 research projects in many fields such as space life science and human research, microgravity physics, space astronomy and earth science, and new space technologies and applications.

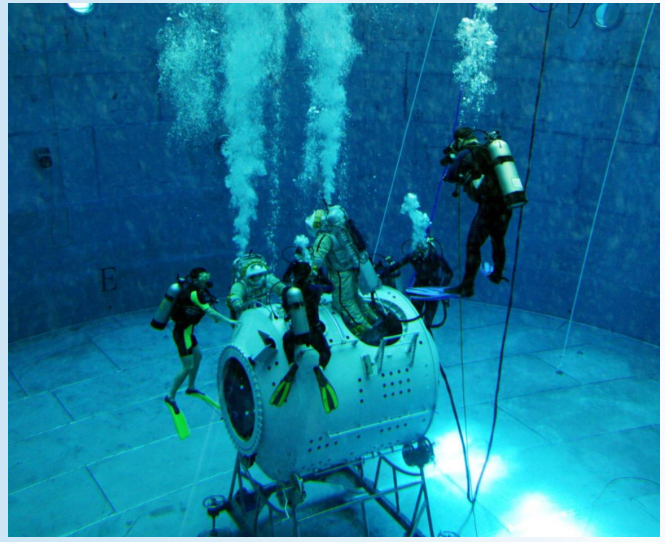


International Cooperation Capacities

The second area is to cooperate on selection and training of astronauts and joint flights.

- Astronaut selection and training system with independent intellectual property rights and Chinese characteristics.
- A mature team of astronaut faculty, with complete facilities and equipment for training and support





International Cooperation Capacities

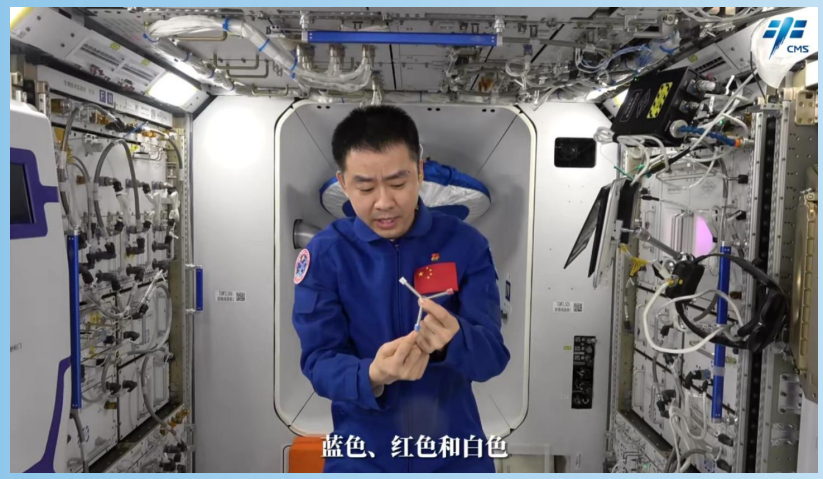
The third area is payloads uploading.

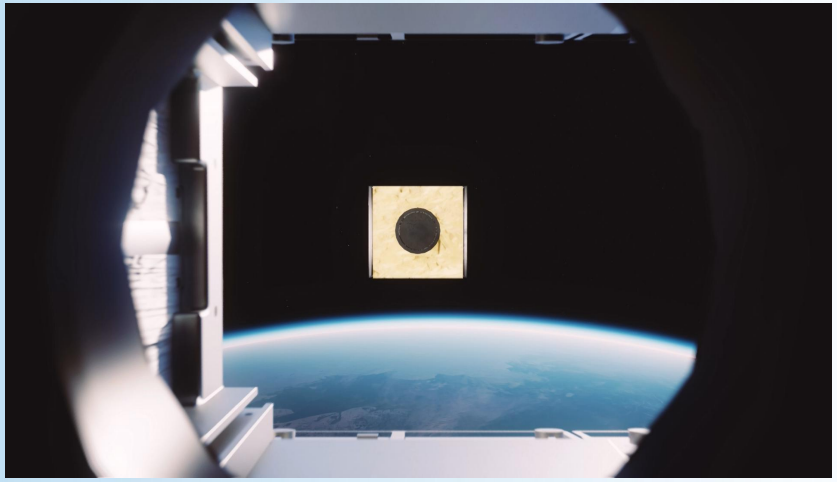
- 2 manned spacecraft launched
- 1-2 cargo launched each year
- certain opportunities for payload uploading capacities of active or passive payloads
- small satellite releasing inside and outside the sealed modules.
- The re-entry of manned spacecraft will have certain capacities to bring back payloads and samples.

International Cooperation Capacities

The fourth area is to carry out popular science education activities in different forms.

- popular science education
- educational activities such as personnel exchange and teaching, micro-satellite training, and on-orbit release
- on-orbit astronauts and other unique resources of the space station to carry out popular science activities in various forms





International Cooperation Capacities

human lunar exploration mission

Conclusion

China will continue its human space program based on the principle of "mutual respect, equality and mutual benefit, transparency and openness", and will take a more open stance to share achievements of China's human space development with countries around the world, especially the developing countries.

We will drive collective efforts around application of China Space Station and manned lunar exploration missions, and contribute to the development of space technology of the world, to the peaceful use of outer space and to the benefit of humanity.

Thank you