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Shanghai
Science & Technology
Museum
Science is indispensable
to humanity
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**Communication of scientific culture:
The important role of science and technology museum in the Internet Era**


Example: Shanghai Science & Technology Museum

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上海科技馆 Shanghai Science & Technology Museum
上海天文馆 Shanghai Astronomy Museum
上海自然博物馆 Shanghai Natural History Museum

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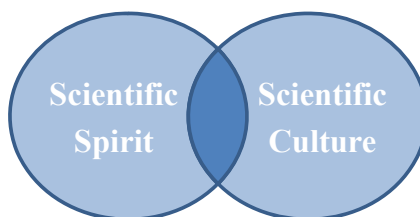


Two Concepts



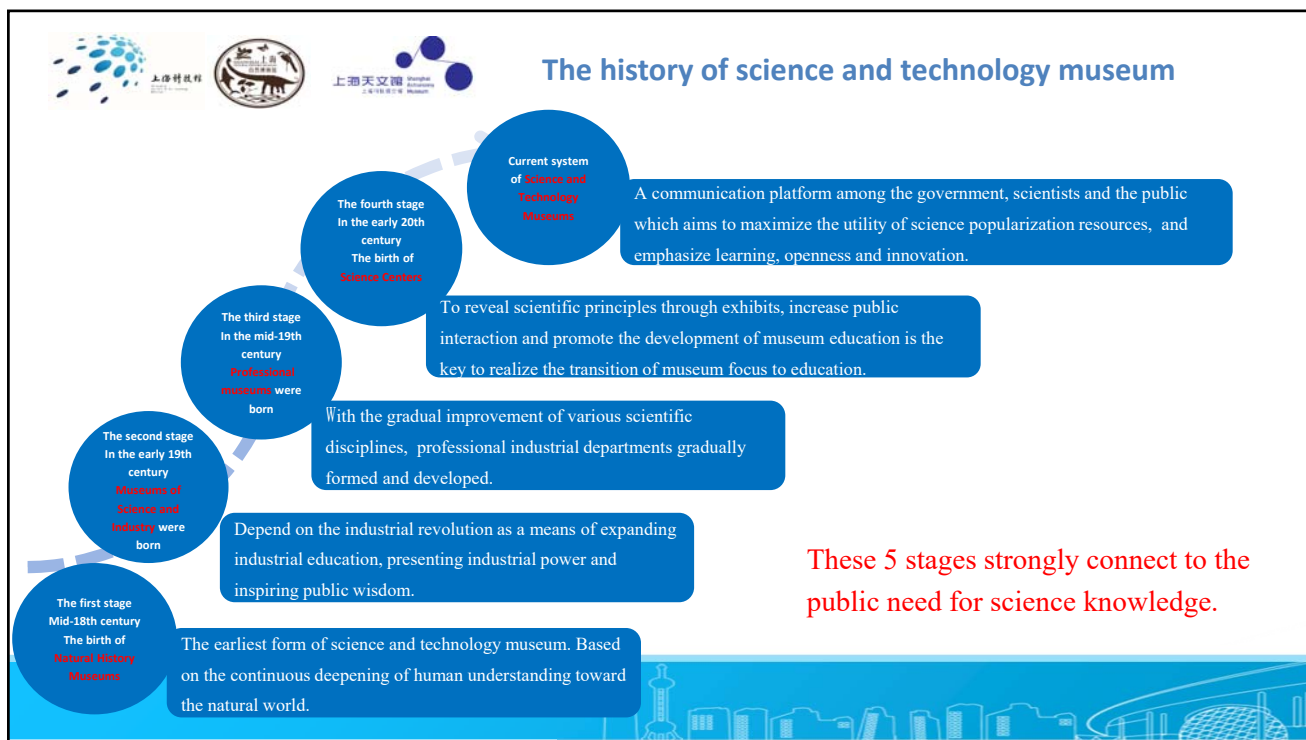
Two Concepts

- The core of **scientific spirit** is the constant pursuit of truth.
- ✓ Communism, Universalism, disinterestedness, organized skepticism.— Robert King Merton
- ✓ Only distinguishing what is right or wrong, regardless of gains or losses.— ZHU Kezhen
- ✓ To love science is to love truth; therefore, honesty is the main virtue of scientists — Feuerbach



- **Scientific culture** is a new culture gradually formed from scientific practice, and its importance is determined by its productivity and freedom and well-being.
- Scientific culture is formed from scientific activities, including the value system, thinking mode, institutional restraint, behavior standard and social regulation. Scientific culture is the spiritual origin of science and technology and the ideological source of innovation and development.
- **The key of scientific culture is to shape scientific spirit.**





The role and value of the museums in communication of scientific culture

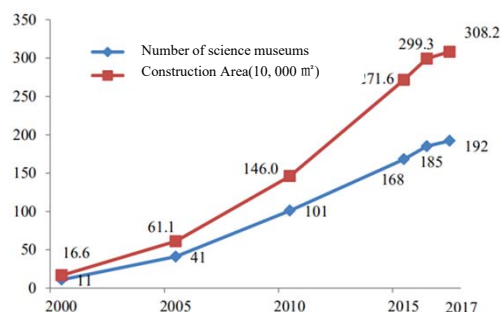


Effective venue for scientific cultural communication

The scale of the venues has grown rapidly .The social benefits have increased.

- From 2000 to 2017, the number of science and technology museums in China has boosted from 11 to 192. In 2018, the number has reached to **244**.
- The total construction area reached 3.082 million square meters in 2017, 17.6 times more than the area in 2000.

The rapid growth of the number of science and technology museums in China reflects the growing public demand for scientific culture.



Science Center World Congress dedicates to promote scientific culture around the world.

The number and scale of science and technology museum in China (2000-2017)



Effective venue for scientific cultural communication

The scale of the venues has grown rapidly .The social benefits have increased.

- 56.982 million visitors have visited science and technology museums in China in 2017, a 1.7 times increase over 2010.
- In 2017, China Science and Technology Museum has received more than 3 million visitors.

Shanghai Science & Technology Museum received more than 6 million visitors.

other 14 science and technology museums in China received more than 1 million visitors.

The increasing number of visitors shows public need towards science and technology museums, and the role of science and technology museums in the communication of scientific culture is becoming more and more important.

Source: "Standard for construction of science and technology museum" (revised) project



Effective venue for scientific cultural communication

Mission: Integration of Science and Culture

Name	Mission
Universcience	Unlocking knowledge. Promoting the culture of science .
Deutsches Museum	To present science and technology as something to be seen and experienced and illustrate its cultural significance by exhibiting unique masterpieces. We inspire people to play an active role in shaping the future.
Science City KolkataTo promote and improve public understanding of the culture of science
Moscow Polytechnical Museum	To draw the audience's interest to knowledge and achievements of the human mind, inspire youth and support young professionals.
H.R. Macmillian Space Centre	To educate, inspire, and evoke a sense of wonder about the Universe, our planet and space exploration.
American Museum of Natural History	To discover, interpret, and disseminate information about human cultures , the natural world, and the universe through a wide-ranging program of scientific research, education, and exhibition.
California Science Center	We aspire to stimulate curiosity and inspire science learning in everyone by creating fun, memorable experiences, because we value science as an indispensable tool for understanding our world , accessibility and inclusiveness, and enriching people's lives.



Different ways of science and technology museums in scientific culture communication:

Permanent exhibition -- full coverage of different themes, the combination of tradition, present and future

In 2017, the total permanent exhibition area of science and technology museums in China was 1.214 million square meters, up 94.6 percent from 2010.

Theme: New energy, aerospace, information technology, biological engineering and other cutting-edge science and technology display content and VR, AR etc.

Exhibits are becoming more and more interactive, inspiring, innovative and characteristic.

● Theme Exhibition Hall

- **China Science and Technology Museum(5):**The Glory of China , Explorations and Discoveries , Science & Technology and Life, Challenges and the Future etc.
- **Shanghai Science & Technology Museum(12):**Cradle of design, Light of Wisdom, World of Robot, Home on Earth, Information Age etc.
- **Miraikan(4):** Explore the frontier, Create your future, Discover your Earth etc.
- **California Science Center(6):** Air & Space、 World of life、 Creative World、 Ecosystem etc.
- **National Science Museum Thailand(6):** Electricity Exhibition, The History of Discovery, Scientific and Technological Inventions, Basic Science and Energy, Science and Technology in Thailand, Traditional Thai Technology





Different ways of science and technology museums in scientific culture communication:

Temporary Exhibition -- tracking the frontier technology, focus on the hot spot of social concern and provoking thinking

Temporary Exhibition

Name	Theme (part of)
American Museum of Natural History	"Nature's Fury: The Science of Natural Disasters", "Life at the Limits: Stories of Amazing Species", "Unseen Oceans"
Palais de la Découverte	"100 years of General Relativity", "When math meets games", "Infinite future"
Science Museum	"Robot: the development 500-year story of humanoid robots", "Top Secret: From ciphers to cyber security"
Miraikan	"The Art of Disney-The Magic of Animation", "Design Ah! Exhibition in Tokyo"
Natuurhistorisch Museum Rotterdam	"101 papavers in één dag", The story of animals and death, Swan song, The art of X-ray
National Science Museum, Thailand	"Fun Science with Thai Traditional Toys", "Living with Mosquitoes", "Mother Nature"
The Moscow Polytechnical Museum	Science of Salvation, Ideas 2020 — A Tour of Tomorrow's World, Cosmos: Birth of New Age
Shanghai Science & Technology Museum	"Blue and White: The Glory of the Silk Road", "Chinese Zodiac", "Story of Time", "Starry Sky Illumination", "How Dinosaur come alive"

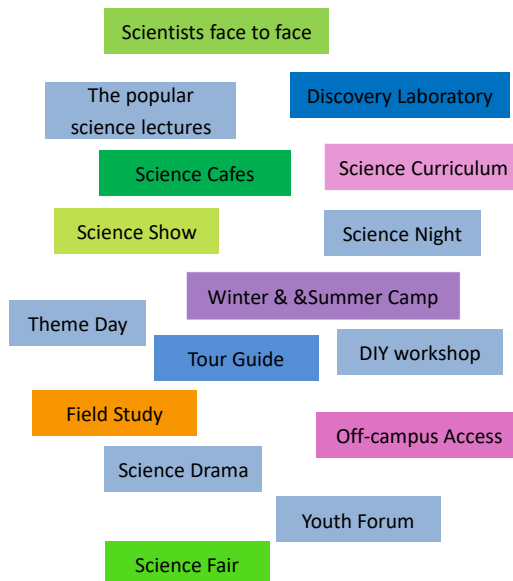


Different ways of science and technology museums in scientific culture communication:

Educational Program -- important way of scientific cultural communication

Museum education is rich in forms.

- Exhibits (collections) can be used as teaching facilities.
- New media and technologies can be used to produce scientific educational activities.
- Educational Programs aim to:
 - 1.Raise public curiosity and interest towards science
 - 2.Make science more popular in the public
 - 3.Free choice and create characterized experience





Different types of science and technology museums in scientific culture communication:

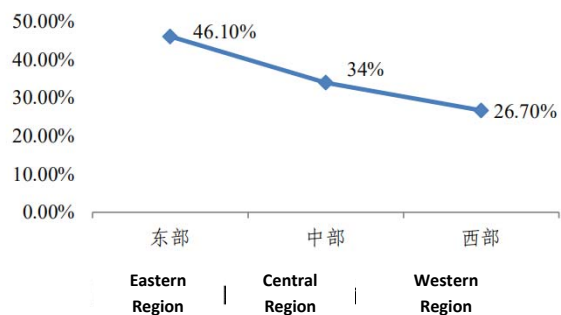
- **Current System of science & technology museums in China:** the first science and technology museum (1983), the first science caravan (2000), the first digital science and technology museum (2005), the first mobile science and technology museum (2010), the first science and technology museum in rural middle school (2012) etc.
- From 2000 to 2018, **1,538 "science caravans"** have been sent to different regions, and carried out **217,000 activities**, attracting **230 million visitors**.
- From 2010 to 2018, about **420 "mobile science and technology museums"** have travelled to 31 provinces and regions in China, benefiting **109 million** people.
- From 2012 to 2018, **708 "science and technology museums in rural middle schools"** had been established in 29 provinces, benefiting more than **3.02 million** students directly.
- From 2005 to 2019, there were **97** digital science and technology museums in China.



Problems existing in development of science and technology museums

1) Science and technology museums are unevenly distributed in China

- In 2017, most science and technology museums are located in the eastern region, while the number in the western region is much lower.



The distribution of science and technology museum in China(2017)





Problems existing in development of science and technology museums


2) Public science popularization services are in short supply

- **Inadequate investment in the construction and operation of exhibition and education.** There is a tendency in some region that people focus more on the construction of the hardware, while pay less attention to the content and management, regardless of science and technology museum as a “education institution”.
- **Lack of innovation ability of exhibition and educational resources.** We need more and more scientists participating in the design of exhibition and educational programme.
- **The application ability of informatization needs to be improved.** The information service capacity of science and technology museum is obviously insufficient. For example, Online Ticket Purchase is not fully applied in China.



The practice of Shanghai Science & Technology Museum





3 in 1 Museum Complex

- **Mission:** : To improve the public scientific literacy and build a platform for the integration of science, technology and humanity.
- **Vision:** To build a science and technology museum group with better capacity of integrating science resource, supporting social development and being one of the leading science museums.





上海科技馆
SHANGHAI SCIENCE & TECHNOLOGY MUSEUM

Shanghai Science & Technology Museum

Shanghai Natural History Museum

Shanghai Astronomy Museum





In the past 18 years, the total number of visitors has reach over **62 million**.

In 2017, CNN reported that Shanghai Science & Technology Museum (SSTM) ranked the **6th** on the list of World's 20 Most Popular Museums.

As the sole popular science museum in China **that won the titles of Grade I National Museum** (in 2012), **5A-class Tourist Attraction** (in 2010) and **Postdoctoral Research Station** (in 2013), SSTM is also one of the first batch of **Study-and-research Tourism Bases in China**.



3 in 1 Museum Complex

Demonstrate educational philosophy

——Build the scientific spirit of criticism, questioning and exploration

- STS (Science, Technology, Society) Mode
- To build a communication platform of "**nature, human, science and technology, universe**"
- The initiative theme-based way of exhibition, focus on the theme and extended thinking

expression of design — eyes on

expression of display — hands on

expression of idea — mind on







Sharing across time and space /Internet plus /increasing the influence


science / documentary film

—Explore new ways for the communication of scientific culture

- Reflect the thoughts and achievements of scientists, and explore the innovation mode of Chinese popular science films led by **scientific culture**
- Commercial Film
- Spread the concept of ecological civilization and promote the **scientific spirit** of nature protection
- Special films (including documentaries)
- Show in commercial cinema, lead the development of popular science film industry
- Micro-video









Sharing across time and space /Internet plus /increasing the influence

science / documentary film

—Explore new ways for the communication of scientific culture

- From documentaries to 4D films, from prehistoric life to living animals, from land to sea, from endangered species to biodiversity protection, we have independently planned and shot **11 special popular science films** and **17 original popular science documentaries** by our own science film making team.
- The films has been shown in more than **10 international public TV channels** such as cctv-9, Hong Kong TVB, Macao cable, Taiwan cable and Russian cultural record channel, Sohu, Youku, Tudou etc. totally **7 famous websites**, China Eastern airlines, Hong Kong's cathay Pacific and dragonair as well as Shanghai Subway.
- The films has been shown in **hundreds of popular science venues** all around the world, **dozens of schools and colleges**, more than **40 countries**, hundreds of millions of viewers.









Sharing across time and space /Internet plus /increasing the influence

Shanghai Science Communication Forum

- Focus on the frontiers of science and technology
- Analyze scientific events
- Highlight the concern to people's livelihood

- A total of **118 forums** have been held, benefiting more than **10 million** online and offline audiences.
- Invited more than **220 famous experts** (including **46 Nobel laureates and academicians**)
- Pay attention to the combination of **science and Culture**
- Explore **online** and **offline** interactions










Mobile science museum

—Spread the seeds of popular science to rural areas





















Sharing across time and space /Internet plus /increasing the influence

Real Time Transmission

--Break the boundaries of time and space


- World Human Population
- Wild Elephant Valley in Yunnan Province








Augmented Reality

--Meet beyond time and space










Sharing across time and space /Internet plus /increasing the influence


popular science books


--Take exhibits and educational activities from museum to home














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Sharing across time and space /Internet plus /increasing the influence

Brand Activity

--Attract more scientists to meet the public through face to face communication

- Each month we will select one of the outstanding scientist who was born in the present month. We will carry out educational activities according to the scientific research field of the scientist, so as to show the **personality charm, scientific spirit and scientific achievements** of the scientist in various aspects, making the scientist **"Star of the Month"**, and advocate the fashion of science.
- Create more face-to-face opportunities between scientists and the public. Meet scientists in museums, campuses, communities and shopping malls.



Academician's Message



Scientist post



Birthday Party for Scientist



live show



Sharing across time and space /Internet plus /increasing the influence

Online museum

--24 hours, 360 degree perspective museum

Wechat:

- More than 1.3 million fans
- More than 2,000 scientific articles (updating.....)
- 285 pieces of audio guide

Web:




- 610 pieces of collection information (updating.....)
- 50 educational activities+ 70 sets of Worksheets (updating.....)
- 120 pieces of scientific drawing
- 216 clips of video/audio data

APP:

- Introduction of 152 species
- 183 introduction site
- 72 "Learn and See" teaching cases
- 145 Visitor interactive activities and interactive functions











Sharing across time and space /Internet plus /increasing the influence


Interpreting Hot Issues with Culture, Science and Technology—Temporary Exhibitions




Accompanied by Science and Health
— A Message from SARS



Blue & White Porcelain Exhibition






Science and Art Integration Exhibition



“Starry Sky Illumination”
Astronomical Theme Exhibition


- Focused on social hot topics and spread human health knowledge.
- Perfect combination of science and traditional culture
- Promoted the cross-border integration of science and art.
- Explored the universe, protected the earth, and held a tour exhibition in Thailand.



Focusing on the latest science & technology and social hot topics, SSTM has promoted cultural exchange, accelerated the penetration of popular science, and actively promoted popular science at shopping malls, parks and schools. SSTM has carried out a total of **93 largescale exhibitions**, attracting about **16.177 million** visitors.

How dinosaur comes alive

- In-depth exploration of scientific content, **27 scientific cases (1822 -- 2016)**, involving **35** genera (species) of dinosaurs, across **5** continents, fully display the **scientific method** and **scientific spirit**.
- The exhibition has travelled to **16** venues. The number of visitors has reached over **1.2 million**.





Sharing across time and space /Internet plus /increasing the influence

Intermuseum Cooperation

—Get close to Mogao Grottoes(Cave engraving), feel the integration of science, humanities and art

The ever-changing science and technology will bring new vitality to Dunhuang ancient art. attract more young people take the initiative to approach the Mogao Grottoes of Dunhuang, for the development of the splendid ancient civilization.



International cooperation contributes to the communication of scientific culture

Shanghai Science Festival

- Founded in 1991, Shanghai Science Festival is held in the third week of May every year, and the main venue is Shanghai Science & Technology Museum.
- The aim of Shanghai Science Festival is to **popularize scientific knowledge, promote scientific spirit, spread scientific ideas, advocate scientific methods, improve citizens' scientific literacy, create a good social atmosphere for science and innovation.**
- Shanghai Science Festival is becoming internationalized these years. In 2018, Dr. Rawin and other international scientists attended **“Science Red Carpet Show”** during the festival.





International cooperation contributes to the communication of scientific culture

Art and Science Forum

- “Art and Science Forum” is co-hosted by Shanghai Science & Technology Museum and Shanghai Museum, every 2 years.
- This forum discusses **the relationship between art and science at international level**, so as to promote the exchange and common development between different museums, universities and institutions around the world.
- In 2018, Dr.Aphiya attended the forum and made a keynote speech.



International cooperation contributes to the communication of scientific culture

Shanghai International Nature Conservation Festival

•“Shanghai International Nature Conservation Festival” aims to promote science education of environmental and ecological protection among the general public and teenagers, to further spread the idea of ‘loving nature, cherishing resources, learning to love and share’”

•Prof. Lee Yee Cheong has made keynote speeches and attend round table conference during 4th “Shanghai International Nature Conservation Festival”





International cooperation contributes to the communication of scientific culture

The 1st Belt and Road Initiative Science Museum International Symposium

- hosted by **Chinese Association of Natural Science Museums(CANSM)**
- published **“Beijing Declaration”**
- to build a platform for science exhibition, education project and staff exchange among science museums in the "One Belt And One Road" countries.
- to provide a model for cooperation among museums, and helps to form a long-term cooperation mechanism for excellent science museums in different countries, so as to promote social progress and the common development of mankind.




Letter of Agreement signed between CANSM and UNESCO



International cooperation contributes to the communication of scientific culture












Cross Region Alliance contributes to the communication of scientific culture

China Yangze Delta Science Popularization Alliance

- **China Yangze Delta Science Popularization Alliance** was jointly founded by **8** main science and technology museum from Shanghai, Jiangsu, Zhejiang and Anhui Province. The members include **74** science museums and **81** universities, enterprises and public institutions.
- **China Yangze Delta Science Popularization Alliance** aims to integrate the popular science resources, accelerate the communication of science culture, share knowledge and innovation with local citizens, and promote the economic and social development.

During 2018 National Science Day, China Yangze Delta Science Popularization Alliance hosted “**Marine knowledge exhibition**”
In 2019, the 1st China Yangze Delta Science Popularization Alliance **Youth Forum and Promotion Booth** was successfully held.



Selected Tourist Routes for Research and Study

Selected Tourist Routes for Research and Study

- Shanghai Science & Technology Museum has organized 3 different tourist routes based on different themes:
 1. **Nature** --A journey of exploring nature.
 2. **Science and Technology**--A journey of pursuing frontier science and technology
 3. **Astromony**-- A journey of following the starry sky.
- We carried out Research and Study through educational programme in museums in different tourist route. We focus on educating tourist and spreading scientific culture during tourists' visit.





Several Suggestions



Could scientific culture be popular?

1. The construction of scientific culture has become a global consensus: from a specific culture to society/mass culture.

- EU: “ Science and Society Action Plan” (2011), emphasizes the importance of cultivating scientific culture as part of improving the overall competitiveness of the EU and an investment of Europe's future
- USA: "American Innovation Strategy" : promoting the construction of national system of scientific culture
- China: Scientific and technological innovation and popularization of science are the two wings of innovation and development. Science popularization is as important as scientific and technological innovation.

2. Information and communication, artificial intelligence and other technologies have contributed to the communication of scientific culture.

- Scientists communicate more closely with the public, and the creation and communication of scientific knowledge become more powerful and convenient. Science can be perceived and understood in any time and space, and knowledge information can be obtained.

3. The constant innovation of modern science and technology requires the support of the popularity of scientific culture

- Integrity issues: Natural conservation; The 4th industrial revolution.



How could museums better communicate the scientific culture through international cooperation?

- Co-develop international temporary exhibition and educational activities with common interest of international counterparts. Share scientific culture in the view of social culture.
- Increase cross-boundary communication and the application of new technologies, promote the integration of science, culture and art in science film production.
- Increase staff exchanges between different regions and museums.
- In the Internet Era, HighTechnology has helped the museums to improve their capacity to spread scientific culture, and make the communication more efficient and direct, breaking the limits of time and space.



Thank you for your attention!

