
Shanghai Planetarium – Progress to Be a Top Rank Planetarium

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Shanghai Planetarium (SHP) Project has been approved by Shanghai Municipal Government in January, 2014. Shanghai Science & Technology Museum (SSTM) was entrusted by the government to take charge of such a big project and the SHP will be SSTM's second branch. Four years later, a brand new comprehensive planetarium will appear in the southeast of Shanghai, a new area named "Lingang New City". It will become the second comprehensive planetarium in China and as a building area of 38,000 square meters, it will be one of the biggest and most advanced planetariums in the world. This talk will report the background of such an exciting project, its ambitious goal, creative designing concept and newest information of constructing progress.

1. Introduction: A 40 Years' Dream

Planetarium is undoubtedly the most important way for astronomical education and will be a cradle for future's astronomer.

In China, the first and the only comprehensive planetarium till now is Beijing Planetarium which is a successful planetarium and inspired many astronomy fans' dream of becoming a scientist. As the biggest and another important metropolis in China, Shanghai also desires a big planetarium to serve for the most populated area in China.

The dream began as early as 1974; Shanghai Planetarium project has been discussed and approved by the National government. But the project has finally been canceled because of some political reason.

In the early of 1990s, The Shanghai Planetarium project was on the agenda again, Famous astronomer Ye Shuhua and other 3 academicians of Chinese Academy of Sciences (CAS) suggested setting up a comprehensive planetarium in Shanghai; the project has nearly been approved by the city government. But a new suggestion emerged that combining the function of planetarium in the Shanghai Science and Technology Museum (SSTM). That's why the SSTM have 2 dome theaters. But the exhibition of astronomy has actually been ignored in the process of constructing SSTM.

More than 10 years elapsed, with the success of Shanghai EXPO, Madam Ye Shuhua, former director of Shanghai Astronomical Observatory (SHAO) and academicians of CAS suggested a new Shanghai Planetarium project again to the government. All astronomers of SHAO supported this advocacy and established a special group to begin the conceptual design and report to the government.

The advocacy was also got the strong support from the city governments. In February 2012, the government asked SSTM to take charge of the planning how to construct a world-class Shanghai Planetarium. SSTM used two years to investigate the goal, function, location, scale of the planetarium and plan the conceptual



Fig. 1 Sketch map of the location of SHP.

content design with the widespread help from astronomers of SHAO. Based on the intensive and carefully analysis and evaluation, The Shanghai government has final approved the construction project of SHP in January 29th, 2014.

After its construction, The Shanghai Planetarium will be the second branch of SSTM. (The first branch of SSTM is the Shanghai Natural and History Museum, which has been opened in April 2015)

2. Some Basic Information of SHP

As to the approved plan, The Shanghai Planetarium will occupy a total area of 58,600 square meters, the constructing area of the building will be 38,000 square meters, and the investment for the building is 495 million RMB.

The Project site is located in the Lingang New City of Pudong New Area, which is in the southeast of Shanghai. It is westerly adjacent to the Lingang Avenue and No.3 North Huanghu Road. And the terminal station of metro Line 16 is very near the site.

This is undoubtedly the biggest planetarium in China, also one of the biggest in the world. A vigorous group composed of many doctors and masters in the field of astronomy and designing has been set up for the project. They will get strong support from SHAO for its scientific reliability;and also get the strong supports of SSTM for the architectural and planning management.

We endowed the vision of SHP as “*To form a complete cosmic view*” and the mission is “*To inspire everyone’s curiosity and encouraging people to enjoy the starry sky, understand the universe and ponder the future.*”

We have the sufficient confident to present a most advanced planetarium in the world.

3. Architecture Design

The architecture design has begun from the summer in 2014. The Ennead Architecture LLP from USA has finally won the international bidding and become the principle designer. In order to realize their great ideas about the whole design, a local architecture also joined as the designing partner.

The Ennead Company has designed an excellent architecture for us (see the Fig. 2). Many astronomical ideas has been applied to this beautiful building. The subject of the design is the gravity and celestial orbits. So the main building is looking like a spiral or orbit. And the surrounding garden is also like a spiral or orbit. Every one can easily distinguish it as a astronomical building.



Fig. 2 Architecture design of SHP from Ennead Architecture LLP.

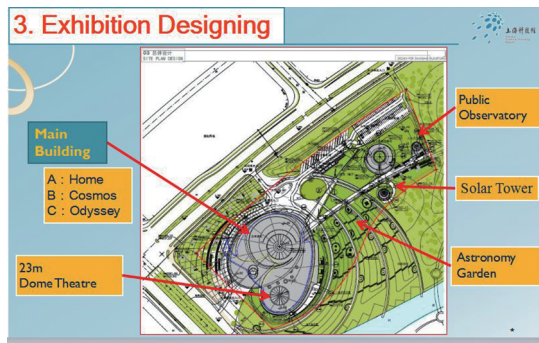


Fig. 3 Whole plan design of SHP.

The main building consisted with two ground stories and one underground stories for exhibition. A 23-meter dome theater and a 18-meter planetarium is included in the main building.

Outside the main building, we still have a big astronomical garden which will place many traditional astronomical instruments and some sculptures about astronomy. Besides that, A public observatory (with 1 meter telescope), a solar tower and a observational camp has also designed to provide the observational activities.

4. Exhibition Design

The exhibition space is really big (totally 12,000 square meters) relative to traditional planetariums. So It's a a big challenge for us to design a leading exhibition on the subject of astronomy.

The Exhibition them of the Project will be “*Connecting man to the universe*”. With that theme, we wish to send visitors on the road to systematically explore the laws of nature, to understand the correlation between human and the universe, to cause them to think about in which way and how will we go in the future, and thus to affect their attitude and behavior towards the nature.

The Project puts *the process that we know about the universe* and *the impact that the universe has on us* together to form a main story line of the whole exhibition by replicating and simulating the starry sky. We will use different multimedia technologies to display from the perceptual knowledge we gained from the starry sky to the rational knowledge we had about the colorful universe, and then we finally focus on mankind, the outcome and explorer of the cosmos.

In our new designed frame of SHP, We will take a journey from our familiar “Home”, guiding visitors to appreciate the beauty and miracles in our own solar system. After going through an special designed immersive 4D theater to quickly wondering our Galaxy, we arrive at the second main area named “Universe” where we organize the content with 5 topic (time-space, gravity, light, element and life) to reveal the structure and essence of our universe. With a recreational spacewalk transitions, we will walk into the third area named “Odyssey” where we want to show how the development of astronomy will improve the progress of human civilization, pushing visitors to journey to the space. Visitors will encounter many big scenes about the space exploration, especially Chinese Chang’e project and Tiangong Space lab.

At the end of this area, we will organize a special zone named “Enigma World” to show as many as cutting-aged theories and weird guesses about our universe, guiding visitor to think openly about the modern astronomy: We have acquired huge amount of knowledge about our universe from generation and generation’s exploration, but we still have more and more puzzles about the deep space, which need every person to concern the seemed irrelevant but actually closely related cosmic event, helping the development of astronomy, that’s the essential purpose of a planetarium.

We have an ambition to lead a new direction for next generation of planetarium. The Shanghai Planetarium will break through the traditional mode which the center is an optic planetarium or digital dome theater. An optic or digital projector will undoubtedly still play an very important role in our planetarium, but it is no longer a center. We will create an immersive and experiential exhibition scene. We will use many characteristic exhibition items to impress the visitors and a great optic miniature of the night sky will freely open to every visitors. We will give back Shanghainese an extremely clear starrysky.

We don’t think the accumulation of multimedia or movies will support a leading planetarium. We will focus the soul of astronomy using any touch-the-heart and long-standing styles. We will ask the designer to combine modern exhibition technology with art, culture and even the human himself. Scientist will be invited to talk or face to the visitors directly; trained staff can discuss and answer questions with the public. That’s the target of our project.

Besides the main exhibition hall ,we will also set up some special zones for children playing, for Chinese heavenly culture, and for Mars exploring center which will use most advanced technology to give visitors a dramatic experience in space.

5. Summary

The Shanghai Planetarium Project now has got the chance to construct one of the biggest planetariums in the world. Besides the scale, the construction team also has the confidence to set up a most advanced and best favored planetarium for everyone in the world.

Everything is going smoothly now, The architecture design has been approved by the government in September 2015, and now they are working hard to change it to construction drawing. We wish to lay the foundation at May 2016. And the whole project is scheduled to be completed and open to the public in the end of 2019.

The exhibition conceptual design has also been submitted to the government and is waiting for the evaluation.

We will do our best to construct a top-rank and different kind of modern planetarium, we need more and more beneficial suggest from all of you.