

**For information**

**LEGISLATIVE COUNCIL PANEL ON HOME AFFAIRS**

**Design and installation of an integrated exhibition system for the  
Hong Kong Space Museum**

**PURPOSE**

This paper seeks Members' support for our proposal to design and install a new integrated exhibition system to replace the current aged one in the exhibition halls of the Hong Kong Space Museum (the Museum).

**BACKGROUND**

2. The Museum houses two permanent exhibition halls as well as a space theatre that presents Omnimax films and planetarium shows. The two existing exhibition halls, namely the Hall of Space Science on the ground floor and the Hall of Astronomy on the first floor, are the main attractions to visitors and play an important role in achieving the Museum's educational goal to promote astronomy and space science to the public. For instance, in 2007, more than 98 000 school children (including 451 school groups) and about 275 000 visitors have visited the exhibition halls of the Museum. A total of about 61 000 school children have also participated in the various educational activities on astronomy and space science organised by the Space Museum.

**JUSTIFICATION**

3. The exhibition halls of the Museum were first opened in 1980

and were renovated once in 1990 after about ten years of operation. At present, after being operated for another 17 years, many exhibits, amounting to about 20% of all the exhibits in the Museum, are outdated as a result of rapid development in astronomy and space science. For example, most space exploration missions carried out in the last two decades are left out in the current exhibits. The International Space Station model in the Museum is based on previous prototype design and does not reflect the latest configuration. New theories and discoveries in cosmology such as dark energy and dark matter are not covered as well.

4. In addition, due to normal wear and tear, the condition of about 40% of the exhibits has deteriorated to an unacceptable level. For example, the launching mechanism of the multi-stage rocket model frequently fails despite maintenance efforts. About 65% of the interactive exhibits would be beyond repair if they break down as many spare parts are no longer available in the market. These components include special devices, mechanical parts, specialised Laserdisc players and Intel 80286 computers with custom-made cards, built-in touch screens and hard-coded software.

5. The Director of Audit's Report in 2006 has also recommended that the Leisure and Cultural Services Department (LCSD) should introduce new exhibits in the Museum.

## **PROPOSAL**

6. It is proposed that the exhibition halls of the Museum be renovated and a new integrated exhibition be designed and installed to enhance the Museum's educational function and public appeal.

### **Project scope**

7. The project will include the dismantling of all the existing aged exhibits in the exhibition halls, improvement of the infrastructure, designing, prototyping, fabrication and installation of new exhibits in a new immersive environment to simulate the experience of travelling through space and time. A new automatic exhibit control system will be installed to integrate

individual exhibits which will be served by a digital audio, video and data network system.

8. The main theme of the new exhibition halls and the detailed exhibit design will be determined by professional exhibit designers in consultation with honorary museum advisers. Preliminarily, taking the two exhibition halls together, we propose that about 60 sets of exhibits, of which about 70% are interactive, will be installed in the 1 600-square metre exhibition halls. Taking into account the results of visitor surveys in 2000 and 2005 and the desirability of complementing the school curriculum, the following theme areas and exhibit highlights are proposed –

- (a) For the exhibition hall on the ground floor, the basic design concept is to make use of the circular, unidirectional nature of the gallery to relate the evolution and development of our universe. To enhance the experience, a dimmed and mysterious environment will be created by the use of lighting, wall murals and elaborated decorations. For example, in the proposed “Reach for Your Star” exhibit, visitors will be able to choose to navigate to another planet or even another galaxy to appreciate the sky from a different perspective and dimension by venturing into a simulated starry night sky. In the proposed “Make Your Own World” exhibit, visitors can interact with each other to create a universe with different mass and energy that is seen to evolve differently from our own by experimenting with controls on a multi-sensory platform.
- (b) For the exhibition hall on the first floor, the major theme will be on space exploration and Sun-Earth relationship. To highlight the high-tech nature of space technology, lighting and environmental decorations will be used to create a futuristic and surrealistic environment. For example, in the proposed “How You Feel in Space” exhibit, visitors will experience disorientation in weightless space and appreciate unusual physical properties of matter by entering an upside down virtual space station.

## FINANCIAL IMPLICATIONS

### Non-recurrent expenditure

9. The total costs of the project including the dismantling of all the existing aged exhibits, improvement of infrastructure and designing, prototyping, fabrication and installation of a new integrated exhibition system are estimated at \$32 million to be spent over a period of four financial years from 2008-09 to 2011-12, with breakdown as follows –

	<b>Estimated cost \$'000</b>
(a) Design of exhibition halls and exhibit systems	5,000
(b) Prototyping and testing of interactive and computer exhibit systems	500
(c) Installation and integration of exhibit systems -	16,500
(i) audio-visual and computer production and installation	5,000
(ii) graphic production	1,500
(iii) exhibit purchase, fabrication and installation	10,000
(d) Automatic exhibit control system	1,200
(e) Digital audio, video and data network for interactive system	1,000
(f) Infrastructure, flooring and electrical work	4,800
	<i>Subtotal</i> <u>29,000</u>
(g) Contingency [about 10% of (a) to (f)]	<u>3,000</u>
	Total <u>32,000</u>

### Other non-recurrent expenditure

10. The proposal will necessitate the employment of two Assistant Curator II on non-civil service contract terms for three years from 2008-09 to 2010-11 at an estimated cost of \$1,999,000. The staff are required for assisting in research, exhibit development, tendering, managing the project,

quality control and user-acceptance. The LCSD would absorb the additional cost from within its existing resources.

### **Recurrent expenditure**

11. There will be no additional recurrent expenditure for the proposed integrated exhibition system project.

### **Impact on revenue**

12. As it is planned that the exhibition halls of the Museum will be closed for a period of six months for dismantling the existing exhibits and environmental decoration, and for installing and testing of the new integrated exhibition system, there would be an estimated loss of revenue from ticket income amounting to about \$700,000. It is estimated that the attendance will increase by 15 to 20 percent for the first three years after the renewal and a corresponding increase in revenue of about \$210,000 to \$280,000 per year.

### **IMPLEMENTATION PLAN**

13. We expect that the entire integrated exhibition system project will take about three years to complete while renovation works will involve closing the exhibition halls for about six months. Subject to funding approval by the Finance Committee, the project will commence in 2008-09 and installation of the new exhibition system will complete in 2011-12. The schedule is detailed as follows –

<b>Activity</b>	<b>Duration</b>	<b>Date</b>
(a) Research on topics and exhibits	3 months	July 2008 - September 2008
(b) Tendering for design	9 months	October 2008 - June 2009
(c) Conceptual design and exhibit prototyping	9 months	July 2009 - March 2010

<b>Activity</b>	<b>Duration</b>	<b>Date</b>
(d) Preparation of detailed design	6 months	October 2009 - March 2010
(e) Tendering for exhibit fabrication	9 months	April 2010 - December 2010
(f) Exhibit fabrication	6 months	January 2011 - June 2011
(g) Dismantling of outdated exhibits and installation of exhibits	6 months	July 2011 - December 2011

## **ALTERNATIVES**

14. We have explored other alternatives to solve the problems described in paragraphs 3 and 4 and considered their merits and demerits. If we replace the exhibits in the Museum by phases, say, in three phases, only about 20 exhibits will be renewed each time. With such a small scale of change, the exhibition will not be able to attract visitors effectively. On the other hand, the total cost involved in the three phases is likely to exceed what is required to produce all 60 exhibits in one batch due to economies of scale.

15. The phase-by-phase arrangement will also impose unnecessary design constraints on the colour scheme, exhibit design and selection of topics. The closing of the exhibition halls by phases will prolong the disturbance to normal operation of the Museum and cause inconvenience to the public. The Space Museum is very different from other museums in terms of configuration as the passage of the exhibition halls in the Museum, in particular the ground floor exhibition hall is very narrow and therefore has to be unidirectional in visitor traffic. The narrowest part has a wall-to-wall width of only about 6.15 m. Construction works on any section of the exhibition halls will block the passage and create operational problems in logistics and visitor flow.

16. In the light of the above, renewing the exhibition halls in one batch is recommended.

## **WAY FORWARD**

17. We plan to seek the approval of the Finance Committee on 6 June 2008 for funding for the proposed project.

Home Affairs Bureau  
May 2008