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### **PROMOTING SPACE EDUCATION THROUGH THE ORGANISATION OF A COMPETITION**

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#### **ABSTRACT**

Space is very pervasive in numerous activities and it would be highly desirable to emphasize its benefits to industry, society and humankind. An effective way of promoting space education would be through the organization of a youth competition on a topic related to space science and technology.

One way would be to organize it as a component of a major event in a related field in order to leverage on common resources, support and visibility. An example of this was the Singapore Space Challenge organized by the Singapore Space and Technology Association, as part of the Singapore Air Show, 19-24 February 2008. This was a national competition open to students in tertiary educational institutions in Singapore.

Another way would be to organize it as a major event on its own. An example of this was the international competition, "Flying into the Future-----Space Exploration Innovation Contest 2006-2007 for Asia". This was organised by the Chinese Society of Astronautics and the Heinlein Prize Trust. The final evaluation and the award of prizes to the winners took place in Beijing on 7 July 2007.

For a competition to be effective in achieving the desired purposes, it would have to be carefully planned, well organized, and widely publicized to the appropriate people. Notice of the competition should be given well in advance so that the participants would have sufficient time to prepare for submissions of works of high quality.

The criteria for evaluation and the procedures for evaluation would have to be transparently seen to be fair. The competition would need to be strongly supported by national agencies so that it can be conducted at a very high level of proficiency. Adequate funds would need to be available from generous sponsors.

## **1, INTRODUCTION**

One method of promoting space education activities would be through the organisation of a youth competition on Space .Such a competition would generate keen interest in space among the enthusiastic young students. The active participation of the students, spending time in the preparations for the competition, would also stimulate interests among other students, as well as the parents of the students. The mass media featuring the competition, the youths participating, and the winning entries could widen interest in space among the general public.

## **2. SINGAPORE SPACE CHALLENGE**

The Singapore Space Challenge, was organised by the Singapore Space and Technology Association (SSTA) as a national competition for tertiary education students in Singapore. The 3 winning entries were exhibited at SSTA's booth onsite at the Singapore Airshow, 19-24 February 2008. This provided opportunities for maximum interaction between the industry leaders invited to the space conference and the winning students.

## **3. SPACE EXPLORATION INNOVATION CONTEST 2006-2007 IN ASIA**

A recently organized international competition was "Flying into the Future----Space Exploration Innovation Contest 2006-2007 in Asia". This had been organized by the Chinese Society of Astronautics in Beijing, China, and the Heinlein Prize Trust of Houston, USA.

This Contest was not restricted to any one country, but was open to any one born in an Asia country and was under the age of 30 years. Its aim was to inspire the imagination and spirit of innovation of university students and young professionals. It sought to encourage them to develop innovative ideas for future commercial space activities that would achieve greater economic benefits for humankind.

## **3.1. Main Purposes**

The Main Purposes of the Contest as stated in the official invitation to participate were as follows:

3.1.1 To discover unique ideas in the field of commercial space activities;

3.1.2 To encourage enthusiasm and spirit in students and young specialists to pursue studies in science and aerospace, and to spur young minds to dare to explore and make innovations in space field;

3.1.3 To recognize talented individuals and help them develop innovative ideas for the benefit of humankind;

3.1.4 To provide young people with opportunities of meeting, communication and learning from each other;

3.1.5 To commemorate Mr. Heinlein, the late American fiction writer.

## **3.2. The time period of the contest**

The contest was officially started in April 2006, although news of the impending contest was made known in many countries in Asia several months earlier. It ended in July 2007.

## **3.3. Participants**

The Contest was open to university students, post-graduate students, young specialists and space science amateurs who were born after July 1, 1976 in any of the Asian countries.

An entry could be submitted by an individual or by a team consisting of not more than five individuals.

## **3.4. Guidelines for Participants**

Some of the detailed guidelines provided for interested participants were:

### 3.4.1.

The submitted work should indicate a potential in the exploration and peaceful use of space resources to bring about significant economic benefits after being realized.

3.4.2.

The submitted work must have a specific theme, be practical technically and with reasonable commercial plans to bring about significant economic benefits after realization.

3.4.3.

New concepts and new ideas in space exploration and peaceful use of space resources are encouraged.

3.4.4.

The contents of the submitted work could consist of structure models, technical drawings, concept descriptions, three dimensional animations, etc

3.4.5.

Participants are responsible for the contents of their own works. They should avoid including confidential information, restricted data and trade secrets

3.4.6.

The submitted work must be written in the English language.

3.4.7.

The copyrights of the submitted works belong to the authors. The authors are responsible for the costs involved in preparing their works.

**3.5. Evaluation criteria**

The basis on which the entries would be evaluated were indicated at the time of Call for Works to be:

3.5.1.

novelty and originality

3.5.2.

in-depth research and technical feasibility

3.5.3.

anticipated economic and social benefits

3.5.4.

commercial value and investment appeal

3.5.5.

fluent expression in English

3.5.6.

presentation skills

**3.6. Evaluation Procedures**

The evaluation was done by an evaluation committee comprised of both technical experts in space or related fields as well as experts in the field of economics.

3.6.1.

Preliminary evaluations were conducted through correspondence among the 12 members of the Evaluation Committee residing in China, Hong Kong, India, Israel, Japan, Korea, Singapore and Taiwan. The names, affiliations and countries and regions of the authors of the works were not revealed to the evaluators. Each evaluator made an independent assessment and awarded a score for each of the 54 submitted works. On the basis of all the scores, twenty of the submitted works were selected for the Final Evaluation.

3.6.2.

The Final Evaluation was held in Beijing in July 2007. The costs for travel and accommodation in Beijing for each author or principal author were provided for by the Chinese Society of Astronautics and the Heinlein Prize Trust.

3.6.3.

For each of the 20 works selected for the final evaluation, an audio-visual presentation was made before a public audience in the auditorium of the China National School of Administration in Beijing. Representatives of the mass media were present with their video recording equipment.

Following each presentation, members of the evaluation committee posed questions to which the presenter had to provide satisfactory answers.

3.6.4.

Each member of the Evaluation Committee made an independent evaluation and awarded scores for each of several aspects of the presentation. The final decisions for the awards in all the categories were made by averaging the scores of all the members of the committee.

**CONCLUSION**

Space education can be effectively promoted through the organization of a competition in space science and technology. The competition would have to be carefully planned, well organized, and widely publicized to the appropriate people. Notice of the competition should be given well in advance so that the participants would have sufficient time to prepare for submissions of works of high quality. As infra structure facilities would need to be used to conduct the competition professionally, it would need to be strongly supported by national agencies. Adequate funds would also need to be provided by generous sponsors such as for example the Heinlein Prize Trust.

