INTERNATIONAL ASTRONAUTICAL FEDERATION

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PLENARY 3 – Next destinations for human spaceflight

The true spirit of collaboration between one generation and the next was ably demonstrated during the Plenary 3 session at the 64th International Astronautical Congress today (Tuesday, 24 September 2013) in Beijing, China.

Current industry leaders shared their real-life experiences of working in the space industry with the vision of some of those who will lead the next generation's space programmes.

William Gerstenmaier, NASA Associate Administrator for Human Exploration and Operations, introduced the panel by saying that students would share their views on the "fun stuff" while industry leaders talked about political and budgetary implications.

The three students were all winners of a worldwide online competition in which they had submitted a short video talking about their favoured idea for the direction of future space exploration.

Industry panellist Fritz Merckie, of Germany-based OHB Systems AG, told delegates and the students that much of the innovation for themes of the future came from small companies like OHB.

"Smaller companies have a challenging and important role - I am not convinced that in the future the big programmes have to be done only by the big companies," he stated.

"We are very much alined to European programmes where it is a complex procedure to launch new programmes.

"This is a critical issue going forward because political timelines usually based on election periods of five years, whereas when we talk about space exploration the timescales are normally so much longer."

He felt it important that new technology is pursued for future deep space missions that might involve humans journeying beyond the Moon.

"Two big problems for humans travelling in space are radiation and consumables," he said. "The longer the journey the bigger these problems are so I believe one solution is to look at developing new forms of propulsion to make mission durations shorter."

Gao Ruofei, Vice-President of the China Great Wall Industry Corporation (CGWIC), offered a snapshot introduction to his company which focuses on two key business sectors - commercial launch services and satellite export.

CGWIC entered the launch services market in 1990 and has conducted 37 launches for international customers, as well as exporting telecom satellites and and one remote sensing spacecraft.

He said that international cooperation on a much broader scale was the way forward and would be of mutual benefit to everyone.

Mr Gao explained that, in his view, launch technologies will always be important because of the requirement to leave Earth orbit before embarking on any kind of deep space exploration.

Paraphrasing John F Kennedy's famous words, he said that "returning safely to Earth" should always be the emphasis of any human mission.

Mr Gao suggested that one option for future large-scale projects would be for private companies and states to be more involved in cooperating together from the outset.

Each of the three students on the panel - Jonathan Lun, Guillaume Tanier and Suzanne Gordon - were introduced to delegates by way of their prize-wining videos before having the opportunity to explain in person their vision for the future.

Mr Lun, a student in South Africa, felt that the main thrust should be exploration of asteroids because this could deliver a range of benefits to humankind.

"Asteroids are a potential threat to life on Earth so by expanding our knowledge of them through both robotic and human missions we can learn how to protect ourselves," he said.

"At the same time we can turn this into an opportunity because many near Earth asteroids also contain vast amounts of resources, including water and minerals."

Mr Lun suggested to delegates that exploration of asteroids might be a first step to protecting our own future in terms of resources, as well as physically protecting our planet.

He proposed three main scientific reasons why humanity's next step should be to explore asteroids - because they are an historical record of the solar system, because they offer the possibility of finding microbial life inside, and to understand better their composition and how they behave in order to help prevent any future catastrophe on Earth.

Mr Lun said the economic potential of asteroids could be immense if we are able to learn how to extract their resources and in turn this would provide a firm foundation for the long term exploration of deep space.

Guillaume Tanier, a computer and software consultant in France, focussed on Moon exploration and in particular exploring fissures that could hold many secrets about the early solar system because they have been protected for millennia from dust and radiation.

He said they would be relatively easy to access and a first step would be to find a suitable location using an orbital mission.

Suzanne Gordon, a student in Earth and planetary science at the University of New Mexico and also

working on a Curiosity science experiment, suggested that Mars should be a prime focus of future human exploration.

“We are still in the dark about a lot of things on Mars and astronauts working on the surface could accomplish so much more,” she stated.

Miss Gordon suggested that the Valles Marineris area - a giant canyon system extending 5,000 km across the Martian surface - should be a prime landing target because it may hold the key to past and any present life on Mars.

She had no doubt that robotic missions have provided excellent good data but suggested that the benefits of humans on surface would outweigh the significant technical challenges of such a mission.

“Astronauts working out in field could act on things right away whereas robotic missions are unable by their nature to respond in real time.”

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