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Global Networking Forum (GNF): Near-Earth Objects and Planetary Defence

A series of dynamic and thought-provoking presentations formed the basis for lively discussions on the topic of Near Earth Objects (NEOs) and their potential threat to life on Earth.

'NEOs and planetary defence - where do we stand?' was a highlight theme for the Global Networking Forum (GNF) at the International Astronautical Congress (IAC) held in Beijing, China, this week.

A packed GNF meeting - part of the International Exhibition Area at the Congress - heard that the definition of a NEO was an asteroid or comet that comes close to Earth at some point - the general consensus being closer than around 45 million km.

Introducing the session, Alex Karl, Operations Engineer at Space Applications Services, described 'planetary defence' as the protection of Earth from such asteroids.

He said the consequences for mounting a mission to deflect any unwelcome interlopers away from a collision with Earth included the development of technologies for deflection, mission design, disaster mitigation, and political and policy issues associated with such a mission.

Scott Hubbard, Consulting Professor at Stanford University, outlined how such asteroids might be detected and said that although the threat was very real the "consequences are completely preventable".

"If we have the right tools to detect them we can also mount missions to deflect them," he explained. "But of the NEOs in the 50 m or so range we only know about one percent of these although estimates say there may be in the region of one million potential objects of this size."

Prof. Hubbard said that the way to find them is by going into space and looking in infrared as they are heated by the sun. He introduced the Sentinel spacecraft, a space observatory currently being developed by Ball Aerospace for the private non-profit philanthropic B612 Foundation.

The foundation is dedicated to the protection of Earth from asteroid strikes and Sentinel is B612's first spacecraft to begin to tangibly address that mission.

Prof Hubbard said the Foundation has adopted an innovative approach to the Sentinel Space Telescope Project which has an estimated cost of \$450 million and has 'borrowed' technology from other hugely successful space telescopes.

"We've taken the best infrared imager design from Spritzer and a focal plane array design from Kepler - the idea is to launch into orbit of Venus and from there, with a 120 degree wide field view, it will give well over 90% coverage of objects 140 m or larger.

Sentinel is scheduled to be launched by a SpaceX Falcon 9 rocket in July 2018 and is being designed to locate 90% of asteroids greater than 140 m in diameter that exist in near-Earth orbits.

The telescope will orbit the Sun in a Venus-like orbit and have an operational time of 5.5 years and will be able to detect objects that are currently often difficult, if not impossible, to see in advance from Earth.

The session focused on the analysis of NEOs to better understand what they are, how to find them and how to deal with them, as well as looking at the role of the public at large in relation to the responsibilities associated with counter-acting NEOs.

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