

Private foundation plans space telescope

Deep-space mission would hunt for hazardous near-Earth asteroids.

Ron Cowen

28 June 2012

If you've got a hankering to protect Earth from wayward asteroids — and a few hundred million dollars to spare — the B612 Foundation would like to talk to you.

On Thursday the non-profit group announced plans to develop and launch the first privately funded deep-space mission, a space telescope that would find and observe 90% of all near-Earth asteroids larger than 140 metres across. The group — named after the mythical B612 asteroid that is home to the fictional character the Little Prince — comprises planetary scientists, engineers, former astronauts and former NASA officials.

From a position on the opposite side of the Sun from Earth, the mission could spot potentially hazardous rocks that can't be seen from Earth. The 50-centimetre infrared telescope, called Sentinel, could identify the asteroids 50–100 years before they hit Earth, says B612 member Scott Hubbard, a former director of NASA's Ames Research Center in Mountain View, California, who is now an aeronautics researcher at Stanford University in Palo Alto, California.

Hubbard says that the mission, which would cost several hundred million dollars, is not a pie-in-the-sky endeavour. B612 is now negotiating to build the craft with Ball Aerospace, a company based in Boulder, Colorado, which built NASA's Kepler telescope and components of NASA's infrared Spitzer Space Telescope. Although the fundraising campaign for Sentinel officially begins today, the foundation already has seed money from several philanthropists, says B612 spokeswoman Diane Murphy. The group declined to say exactly how much it has raised and from whom.

Louis Friedman, co-founder of the Planetary Society, a non-profit group based in Pasadena, California, that promotes Solar System exploration, says that because the effort involves "credible people", it could succeed. "Their mission is very good — just what many have been calling for," says Friedman in an e-mail. He adds, however, that raising several hundred million dollars in private funds is "way more than has ever been even talked about."

Circling the Sun every eight months in a Venus-like orbit, the cryogenically cooled craft could be ready for launch as early as 2016. Sentinel's data would be made public after an initial six months of processing the raw information. In taking a census of about 500,000 asteroids, Sentinel might identify new families among the near-Earth population. It could also spot good candidates for human exploration, notes foundation secretary Clark Chapman, a planetary scientist at the Southwest Research Institute in Boulder, Colorado. In 2010, the administration of US President Barack Obama announced the goal of humans landing on an asteroid by 2025, although specific plans have not been forthcoming.

With NASA's proposed 2013 planetary-science budget poised to drop by 21% from this year's funding, privately funded missions are a welcome contributor to space exploration. "There will likely be more of this sort of proposal as NASA disappears below the waves," says aeronautical engineer Fred Culick of the California Institute of Technology in Pasadena, in an e-mail.

The non-profit Sentinel could also act as a guide for a for-profit effort to mine precious materials from asteroids. In April, Planetary Resources, based in Bellevue, Washington, announced that it would launch a series of small probes to identify the composition of up to 1 million near-Earth asteroids (see *Nature* <http://doi.org/h2b>; 2012). Sentinel's observations could indicate which rocks are the most desirable materials for further examination, Hubbard says.

If Sentinel hews to a 2016 launch schedule, it would beat out a similar mission, the Near-Earth Object Camera (NEOCam), which Amy Mainzer of NASA's Jet Propulsion Laboratory in Pasadena, California, and her colleagues first proposed to the space agency in 2005. NEOCam wasn't selected for NASA's competitive Discovery programme of medium-sized planetary science missions, which are capped at US\$425 million. But in 2010 the agency gave the team money to continue development of the mission's infrared detectors. NEOCam would carry the same size telescope as Sentinel but wouldn't require cryogenic cooling. According to current NASA plans, the mission wouldn't have a chance to compete in Discovery again until 2015.

Ball Aerospace

The Sentinel space telescope would take a census of 500,000 asteroids.

