Going for gold beyond Earth

A well-worn theme of science fiction, mineral extraction in space may be on the verge of becoming a reality, after Luxembourg announced this week steps to create a legal framework for exploiting resources beyond Earth's atmosphere.

Why mine asteroids?

- A large number of asteroids which vary in size from a few hundred kilometres across to a few metres are clustered in a belt between Mars and Jupiter, and orbit the Sun in the same way as planets.
- Rare metals and other elements are more plentiful and accessible on these free-floating fragments than on Earth.

Jupiter

• Nasa has identified some 1,500 asteroids that it has described as easily accessible.

Asteroid

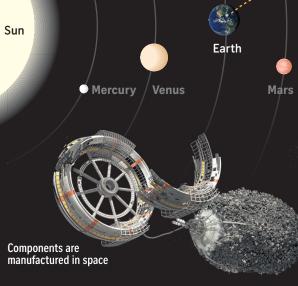
belt

Mining process, according to US company Deep Space Industries

Prospecting
Space probes, the size of suitcases, are launched into the asteroid to search for water, iron ore, rare-earth metals and silicates.

Probe

Harvester



→ Harvesting

Resources are harvested using specialised robotic spacecraft. Harvester spacecraft will utilise water extracted from the target asteroid as propellant for the return trip.

Processing

Those resources will then undergo a unique processing stage, separating valuable components for manufacturing.

Manufacturing

Processed materials will then be used to manufacture components, such as antennas and reflectors for satellites, using 3D printing.

Harvester with processing equipment