China Unveils Newest Satelliteâ€™s High-resolution 3D Imagery

China has recently shared the first high-resolution 3D images captured by the Gaofen-7 imaging satellite, which was launched in November. The satellite – the latest in a series of 14 planned satellites intended to overhaul China's orbital imaging capabilities – is claimed to be so precise that it can 'see' individual people from 500 kilometres up.

Companies like Planet are launching hundreds of satellites to provide terrestrial businesses with up-to-date imagery, so it not surprising that China, among other countries, would want to have its own. The Gaofen project has already significantly reduced the country's reliance on foreign sources for this critical data and hence avoid the potential friction that has been seen in other areas of technology.

Multispectral cameras and high-precision laser altimetry

Each new satellite has added unique or improved capabilities to the constellation, using different orbits and equipment to provide different data to the surface. Gaofen-7 combines multispectral cameras with highly precise laser altimetry to provide extremely detailed – albeit not quite full-resolution – 3D images of structures and land forms.

Under ideal conditions, the satellite can produce colour imagery at sub-metre resolution, allowing detection of objects measuring less than a metre across, and with about 1.5m resolution for depth, which enables it to 'see' individual people.

Surveying and construction

The sensitivity of the Gaofen-7 satellite makes it ideal for surveying and construction purposes. "It's like a precise ruler for measuring the land," the satellite's lead designer, Cao Haiyi, told China's state-run news agency Xinhua. "In the past, surveying and mapping work was labour-intensive and took months or even years. With the new satellite, these tasks can be completed in minutes. Before the launch of Gaofen-7, we could only precisely locate super-highways, but now Gaofen-7 can help us accurately locate rural roads too."

Gaofen-7 has already captured thousands of images and is intended to remain in orbit for at least eight years. Some of the imagery from the project will be made available globally, but Gaofen-7's images will remain proprietary for the foreseeable future.

Gaofen-7 high-resolution 3D imagery.