

Interview

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Interview with: Herb Satterlee, Chairman & CEO of DigitalGlobe

By Gordon Petrie

*Herb Satterlee,
Chairman and CEO,
DigitalGlobe.*



Two years ago, Herb Satterlee (Chairman & CEO of DigitalGlobe) gave a very open, frank and highly informative interview about his company and about the commercial space remote sensing industry in general. This appeared in the September/October 2002 issue of *GeoInformatics*. Since then, DigitalGlobe has gone from strength-to-strength having received large high-value contracts from NIMA (now NGA) under its ClearView and NextView programmes and having announced the funding and construction of its next-generation WorldView high-resolution satellite. As a result, the company has just been presented (in May 2004) by the Frost & Sullivan global consulting firm with the award for the 2004 Aerospace & Defense Product of the Year given for its development of new products and technologies. Clearly, in view of these developments and successes, it was time to interview Mr. Satterlee once again.

Petrie: Since your last interview in September 2002, the DigitalGlobe company has nearly doubled in size in terms of its number of employees. Has this rapid expansion given you problems in recruiting suitable staff and in training them? Are you still able to accommodate the greatly expanded staff together with the accompanying facilities in your existing headquarters in Longmont? Or will there be a need to move the company to a new location to provide the required accommodation and facilities?

Satterlee: It is always a challenge to recruit new people. Two factors have made this a bit more challenging. One is that we have grown at a rapid pace in the last two years. The other is that the economy is starting to come back, so competition for quality employees has grown. We have a very good methodology for finding, interviewing, and hiring high-quality people and we have been able to maintain our culture and quality of work standards here at DigitalGlobe. DigitalGlobe will be moving in the August and September timeframe, about a half mile from our existing facility. This will double our space and enable us to accommodate our long term growth and strategic plans.

Petrie: Outside North America, where DigitalGlobe has a large and active network of re-sellers, the company has relied to a considerable extent on its two master regional distributors - Hitachi (for Asia) and Telespazio/Eurimage (for Europe) - both of which were investors in the original EarthWatch company. Now DigitalGlobe appears to be changing its marketing and sales strategy with the recent establishment of its DigitalGlobe Asia company based in Singapore, while Hitachi is to retain its exclusive distributorship for Japan only. What lies behind this change? And will this also be

applied to Europe where the DigitalGlobe company and its QuickBird imagery are perhaps less well known than they might be?

Satterlee: In listening to our customers, we found that having a presence in Asia was necessary and working with Hitachi to find a mutually beneficial model has been our goal. The new structure in Asia enables to work us closer, not only with Hitachi, but with other business partners to help grow a very promising market. We have no plans to change the structure in Europe; we are very pleased at the growth that Eurimage and Telespazio have given DigitalGlobe. We continue to see large growth throughout Europe as customers are very impressed with the quality of our products and the customer care that our business partners and DigitalGlobe give to customers.

Petrie: The recent acquisition of eMap International - which is best known as a GIS consultancy - appears to be a somewhat unusual move on the part of DigitalGlobe. What is the rationale behind this particular acquisition?

Satterlee: With our efforts in the commercial realm, we started partnering with David Nale and his team at eMap and quickly found that his understanding of commercial remote sensing and the civil government market was invaluable to our success. In the long-term, we felt that it would be in our best interest to formalize our partnership. This is more about expertise than venturing into the services realm.

Petrie: Previously there was a strong partnership between DigitalGlobe and Intermap Technologies through the purchase of airborne interferometric SAR imagery by NASA under its Scientific



High-resolution image acquired by the QuickBird satellite that shows part of the centre of Istanbul, site of the recent ISPRS Congress.

Data Buy programme. In your previous interview, you said that you hoped that this cooperation would continue. However, in the interim, matters seem to have taken a different course - with Intermap pursuing a series of very large commercial projects such as NEXTMap Britain; NEXTMap Indonesia; and now NEXTMap USA. So what is the current relationship between your two companies? Will DigitalGlobe have any part to play in these NEXTMap projects? And does it plan to make use of the resulting DEM data to produce ortho-rectified QuickBird images?

Satterlee: As Intermap has grown, it has taken on more projects directly that would help grow its business and it has completed some very impressive projects. We always look for opportunities to partner with

Intermap as our datasets are very complementary. We don't have plans to be a part of the NEXTMap projects since our products don't fit the requirements. But we are certainly interested in the resulting products as we can utilize them to create value-added products.

Petrie: What about the future for spaceborne SAR imagery? Obviously European countries such as Germany (with its five SAR-Lupe and one TerraSAR satellite) and Italy (with its four COSMO-SkyMed satellites) have gone for this type of imagery in a big way with strong backing from their respective defence ministries. Canada (with Radarsat-2), India and Israel are also building radar satellites with help from their governments. By contrast, although NASA has made

several proposals such as LightSAR, nothing has come of these, yet military interest in high-resolution spaceborne SAR imagers with their all-weather, day/night capabilities is high. Do you foresee the emergence in the United States of a similar project to that of NextView with commercial space image providers being asked to supply the U.S. military and intelligence communities with high-resolution spaceborne SAR imagery as well as the present optical imagery?

Satterlee: Since we don't work in the SAR product offering, it is hard to speculate on future initiatives, although again they are obviously complementary product offerings. So we are very interested in these initiatives and look to provide our data integrated with SAR data. Currently we have not seen the same interest

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in high-resolution SAR in the United States and really we don't foresee NextView like contracts being put forth to obtain SAR imagery.

Petrie: Your company's successful AgroWatch programme providing image data and crop information to the agricultural industry is, to a considerable extent, centered on the use of medium-resolution SPOT imagery for which you are the official channel provider for the agricultural sector within the United States. Furthermore DigitalGlobe is the channel supplier for the SPOT imagery required by the U.S. intelligence and national security sector. This alliance with SPOT Image is obviously beneficial to both sides in the short to medium term, but what about the longer term? SPOT-5 is the last in the series, after which, the French space agency (CNES) will concentrate on the acquisition of high-resolution imagery using its Pleiades satellites and imagers that are now under construction by Astrium and Alcatel respectively. How will the medium-resolution, wide-area space imagery provided by the SPOT satellites be replaced?

We do consider the relationship with SPOT to be very valuable to our business model. For the short and medium term, we plan to grow the relationship as our products work very well together in several markets and see potential for many more applications. For the longer term, we plan to work with other medium-resolution, large area collectors which could include the IRS or even Landsat data sets.

Petrie: Still on the subject of medium-resolution space imagery, DigitalGlobe withdrew from the competition for the Landsat Data Continuity Mission (LDCM) after being one of the two finalists and having been awarded money by NASA for the detailed development of the company's M5 proposal. Obviously still more money from your own company and that of your partners was spent on the project. Please could you explain why your company withdrew its proposal at such a late stage of the competition.

Satterlee: We did put a great deal of effort into this project. However, in the long run, when we looked at our final offering and it

came down to business and contractual issues, the risk was not worth the return. So we felt that it was not in our best interest to bid on LDCM. The technical side was not the issue: there were way too many requirements put forth on the business side that put all of the risk on DigitalGlobe, while the return was not worth the risk.

Petrie: Since then, the Landsat-7 satellite has been crippled with the failure of its Scan Line Corrector mechanism. Furthermore NASA and USGS did not accept the proposal from the other finalist in the LDCM competition, Resource21 - which has now gone out of business. Thus currently the LDCM programme is in disarray. Obviously the scientific and agricultural communities who have been primary users of Landsat data are extremely upset at this outcome - as evidenced by their Open Letter asking NASA and USGS to continue to try and find an alternative solution to the Landsat continuity issue as soon as possible. The ASPRS has also passed a similar resolution. How do you see the way forward in this particular matter?

Satterlee: This is really a NASA issue and they will have to find the best solution since we have removed ourselves from this program. We would be more than willing to provide a solution, but it would have to be a more partner-based solution, working together with the commercial industry.

Petrie: Turning next to the new WorldView high-resolution satellite, the original QuickBird-1 satellite had an orbital height of 600km; a ground sampled distance (GSD) of 1m for its pan imagery and a swath width of 22km. For QuickBird-2, the orbital height was then reduced to 450km, so the GSD of the resulting pan imagery was improved to 0.6m, while the swath width was reduced to 16.5km. Now for the new WorldView satellite, it has been reported that the altitude will be increased to 770km to ensure a slower movement of the satellite over the ground and a longer dwell time for the acquisition of its image data. Yet the GSD of the imagery will be improved to 0.5m for commercial use and 0.25m for government and national security use only. This will require "bigger mirrors, a larger spacecraft and a more powerful launch vehicle" (Satterlee 2003). Please could you provide some more detailed information about these technologies that DigitalGlobe and its partners will use to fulfill these demanding requirements. What will be the swath width of the resulting imagery?

Satterlee: One clarification, WorldView will be 0.5 meter and not 0.25 meter. All customers will have access to the same resolution of 0.5 meter. WorldView is not new technology; it is an upgrade to the QuickBird satellite. Of course, some of the sensing components will be larger but this is not a 0.25 meter satellite. The main feature will be state-of-the-art agility, a higher orbit and a much greater downlink capability that will result in 3.5 times greater collection capabilities. With a 3 year overlap with QuickBird, we will be collecting 3 to 4 times more imagery than what any competitor can collect. The swath width will be 16.8 kilometers.

Petrie: At the DigitalGlobe User Group meeting that took place during the recent ASPRS Annual Conference held in Denver, it was mentioned that the multi-spectral imagery (with 2m GSD) to be acquired by the WorldView satellite will feature four new spectral bands, as well as the standard four (red, green, red and

near-IR) bands used to produce the current QuickBird multi-spectral imagery. Please could you furnish readers with some more detailed information about these new spectral bands and their intended applications.

Satterlee:

Yellow – To give a true natural color, for almost all applications

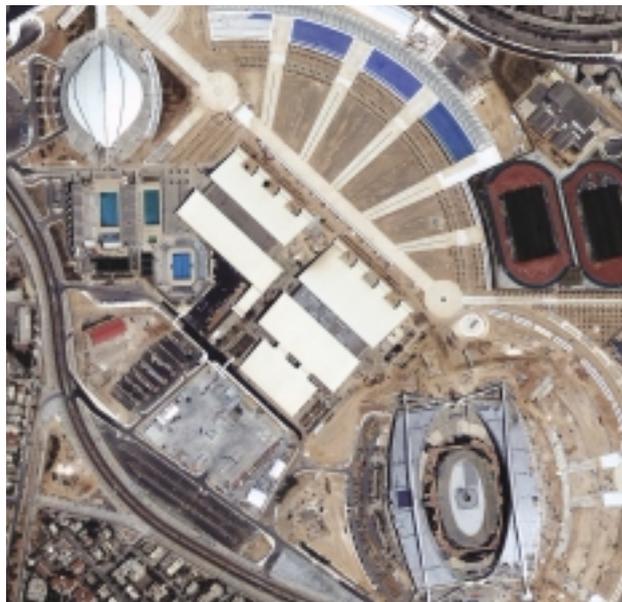
Red – To increase the vegetation information, for forestry, agriculture and all vegetative studies

Coastal – To provide significant water penetration for coastal studies

New IR 2 –To ensure more fidelity

Petrie: Originally each of the three American commercial operators planned to have two high-resolution satellites in orbit, which, given that all three companies had their first satellites fail at launch, confirmed the need for redundancy. An obvious question to ask is whether a pair of WorldView satellites are also planned to be constructed and launched or only the single example announced to date.

Satterlee: DigitalGlobe has always had a plan to have a constellation of at least two satellites. Currently WorldView and QuickBird should have a three year overlap. In addition, we do have plans to start work on a second WorldView satellite but don't plan to announce it until it is under construction. This is really a financial issue more than a risk issue. WorldView is planned to be



QuickBird image showing the main sports complex that was built for the Olympic Games held recently in Athens.



Artist's impression of the new WorldView satellite that is being built for DigitalGlobe.

launched on the most reliable launcher in the world, a Delta 2. Furthermore WorldView is based on a platform that has a long legacy of success, including QuickBird. The risk is not so much a concern as it being a financial consideration. Is the demand great enough to need the capacity of a second WorldView satellite?

Petrie: One notes that the ViaSat company has recently been awarded a contract by DigitalGlobe to supply and install two new 5.4m diameter antennas at ground stations in Norway and Alaska. Will these simply replace the existing antennas at these polar sites or will they supplement them? Please could you also explain the necessity for the third ground station recently established in North East Pennsylvania. Presumably this will take care of data reception from certain orbits that cannot be seen from either the Norwegian or Alaskan stations when the QuickBird or WorldView satellites pass over the north polar area.

Satterlee: The ViaSat antennas are an addition to the existing antennas. The Pennsylvania antenna was put in place to ensure we had full coverage in Asia to meet the growing demand.

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