

Google and Aerial Survey

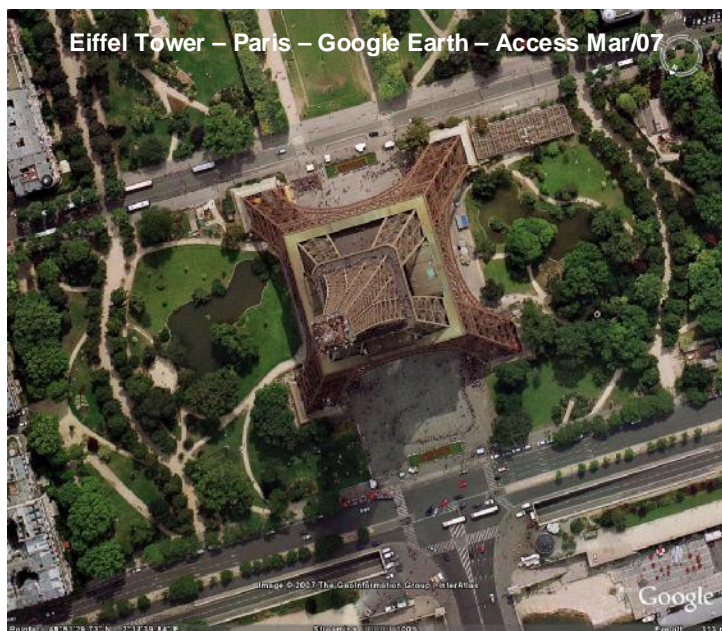
Valther Xavier Aguiar

Aerial and satellite images are largely available for viewing in the Internet through programs such as Google Earth, Microsoft Virtual Earth and NASA World Wind. This recent availability is impacting the land information market and benefiting the market as whole. How many of us, including those closely involved with the matter, have been amazed at the ease of viewing our own house and places that we once could only see in post cards and other travel photographs?

Although all regions of the world when visited over the Internet show day time images and almost always in the same season, many people strongly believe that they are taken and viewed in real time and that they are all exclusively satellite generated. As suggested by a friend, it is easy to demystify the first “assumption”: ask someone or your child to go outside, access Google Earth and try to locate him or her. You will then find



out that the images are definitely not shown in real time. If they were, the person would appear in it, and some cars would be moving instead of being all stationary. Do not be surprised if the images you view are two years outdated. This is very likely to be the case. The second “assumption” is not as easy to demystify. However, you should believe that the images presenting better quality and resolution are the aerial ones and not those taken from satellites, such as those of New York, Paris, Tokyo and numerous others cities worldwide. Good quality images



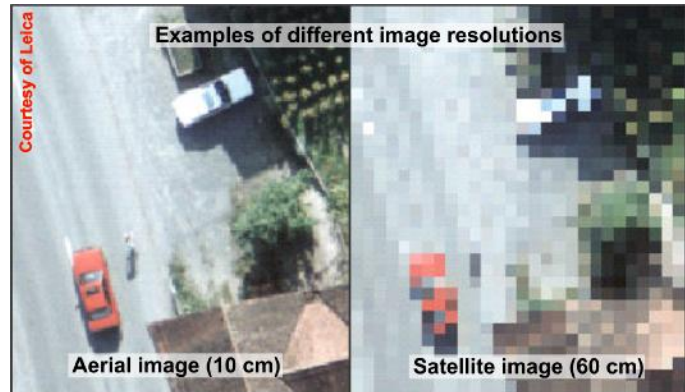
can only result from aerial sensors transported at much closer distances to the Earth than those from satellites currently in orbit. Google Earth does not inform the type of image shown on the screen. The only way to deduce whether an image is an aerial or satellite one is to look at its characteristics, resolution, and provider name or copy right owner. In some countries, Google was not very welcome, and after some protests, it is considering blocking images of these countries or certain regions.

Topography, aerial photogrammetry and orbital imaging have always had overlapping application areas; in other words, a product resulting from one or the other technology may indistinctly meet the needs of a certain user. However, the marketing of satellite imaging has always been more predominant, perhaps because it requires more convincing technical explanation. The simple fact that it is associated to the words “spatial” and “satellite” already causes a natural interest and sympathy in all of us, reminding us of scientific fiction movies and overestimating its potential.

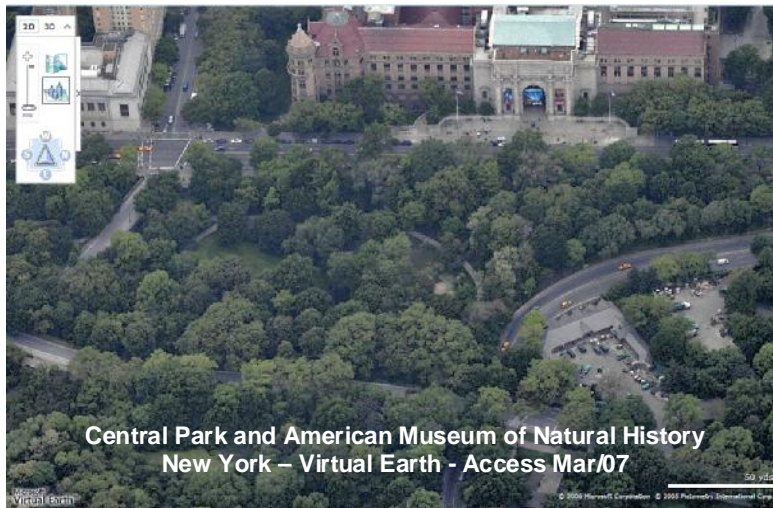
In the past, topography and aerial photogrammetry had overlapping areas of application and conflict. Today we all know what we can expect from each one of these disciplines. Technological advances added to the American government’s permission to place satellites at

lower orbits – approximately 400 km, allowing for higher resolution imaging - has caused orbital imaging to dispute more portions of the market share, once only explored by aerial photogrammetry. Although many hope that satellites can generate images of the Earth with equivalent resolution than that generated by aerial survey, this is still a long way away since aerial images are taken from flying heights starting at 500 meters above ground level. The smaller the distance or the atmospheric layer between the sensor and the ground the better the image may be.

Some say that no satellite image can be better than aerial ones. All imaging technology used in satellite is also used in an aircraft. The latter has the advantage of being much closer to the Earth, and also allows for constant hardware upgrades, which may seldom happen after satellites are launched. I use to say that orbital images have specific and very interesting applications, especially when the image is already available. Otherwise, mobilizing an aircraft and, in favorable weather conditions, obtaining aerial images with the best resolution, not depending on favorable weather conditions and luminosity during the satellite passage, ends up being the cheapest and fastest option in many cases. The interval between two consecutive satellite passages may be of several days.



Microsoft, with its Virtual Earth, is seeking an outstanding position in the market. It has taken several actions to materialize this position, among which, it acquired an important digital camera manufacturer not to delay its attempts to catch up with its main competitor: Google Earth.



Virtual Earth intends to make available three-dimensional virtual models generated from 10 to 20 cm resolution aerial images of the main cities of the world together with plenty of other geo-related information. Currently, the best resolution of a satellite image is 60 cm, and in a near future, it will be 40 cm. On the other hand, NASA's World Wind, which even allows

viewing of the moon, despite being very interesting and sophisticated, has not become a 'trend' such as Google. At least around here...

It is still early to predict the real impact Google, Virtual Earth and others will have in the market. However, the changes will certainly be significant in the coming years. Indeed, only recently the ordinary user was able to access these aerial and satellite images at no cost, and was even able to develop basic applications from them. The true fact is that the Google Earth phenomenon and its competitors are disclosing to the world data which once was accessible only to the geoinformation sector, and, in addition, are becoming big players and customers in this industry. Good for us in this market!

Valther Xavier Aguiar is a cartographer engineer and Technical Director at ESTEIO S.A. an engineering and aerial survey company in Curitiba, Brazil. valther@esteio.com.br