DigitalGlobe 30cm Imagery Supports Performance Based Navigation

Performance Based Navigation (PBN) delivers new air routes and procedures that use satellite-based navigation and onboard aircraft equipment to navigate with greater precision and accuracy. The benefits of PBN are many, including more direct flight paths, improved airport arrival rates and increased safety and fuel efficiency. It’s the next generation of navigation and one that DigitalGlobe 30cm imagery is already playing a role.

The Impact of Performance Based Navigation

Carrying over 3 billion passengers in 2014 and employing nearly 9 million people, the size and scope of the aviation industry is mind boggling. Any enhancement to performance and efficiency has far-reaching implications – for the air carrier, passenger, airport facility and the environment.

“With the right data accessible and in place, Performance Based Navigation will enable more efficient takeoff and landing patterns, leading to a wide range of benefits from increasing airport capacity to fuel and pollution reduction,” said Mr. Kenji Wakamatsu, Director of EO business, Public Sector, NTT DATA Corporation, a DigitalGlobe master reseller headquartered in Tokyo. “High resolution and highly accurate images are required to meet the strict standards of PBN set by international aviation organizations like the US Federal Aviation Administration and the European Organization for Civil Aeronautical Equipment.”

Seeking a cost-effective solution to create a “3D airport dataset” to meet PBN requirements – elevation vector datasets that identify significant natural or manmade obstacles around an airport – A Japanese customer approached NTT DATA to conduct a pilot project using newly-available DigitalGlobe 30cm imagery to map the surroundings of several airports in Japan.

Aerial Imagery Cost Prohibitive

Most avionics agencies have used aerial imagery solutions to produce the high-resolution data required to meet the strict specifications of PBN, but cost and a lack of ability to regularly refresh those images have limited those efforts.

“The only option to achieve the desired resolution was aerial data. Those images are expensive and due to the cost customers may only be able to acquire new data every five years, unacceptable for PBN, which requires current data for continuous high accuracy. Now, DigitalGlobe with WorldView-3 and its 30cm imagery, has the potential to provide a cost-effective solution that can generate results that meet PBN requirements.”

Mr. Kenji Wakamatsu, Director of EO business, Public Sector, NTT DATA Corporation

Company information

NTT DATA is an experienced Japanese IT and remote sensing company specializing in cutting edge 3D mapping solutions. NTT DATA provides a wide range of applications for telecommunications, air traffic control, natural resource engineering and electric power. NTT DATA, a master reseller of DigitalGlobe commercial satellite imagery and geospatial solutions in Japan, is one of the top 10 ICT companies globally.
**Pilot 30cm Imagery Project Launched at Several Airports in Japan**

From a functional standpoint, 40cm and 50cm imagery is suitable for capturing horizontal measurement, not the vertical height also required in PBN obstacle mapping. With the launch of DigitalGlobe’s WorldView-3 satellite, satellite imagery for the first time became a viable alternative to costly aerial data. Anxious to complete a proof-of-concept for the Japanese customer, NTT DATA procured 30cm DigitalGlobe imagery covering 200 square kilometers of the surroundings of several Japanese airports in February 2015.

“The pilot project provided strong proof that 30cm images meet and even exceed accuracy expectations, especially for airports situated in more rural and sub-urban areas, which is where the majority of airports are located,” said Mr. Kenji Wakamatsu. “The 30cm imagery readily enables obstacle extraction of smaller buildings and can be used to update 3D obstacles more quickly and cost-effectively than aerial photos.”

### 30cm Imagery Viable for Mapping Airports Globally

With the ready ability to capture the vertical accuracy required of PBN applications, 30cm imagery has the potential to meet the data collection needs of more than 100 airports in Japan alone and countless others around the globe. At a cost of 70% or lower of aerial imagery, realizing the potential of PBN is within the grasp of hundreds of airports that previously faced insurmountable budget obstacles with aerial images.

“Performance Based Navigation requires fast delivery and regular cost-effective updates, two characteristics that aerial imagery could not provide. Now, with the ability to create an elevation vector dataset for all significant man-made and natural obstacles around an airport with 30cm imagery, potentially hundreds of airports will find this solution viable to finally put PBN applications in place that will deliver on the promise of more efficient takeoff and landing patterns to reduce fuel consumption and increase capacity, while minimizing the environmental impact.”

Mr. Kenji Wakamatsu, Director of EO business, Public Sector, NTT DATA Corporation

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**Challenge**

Find a cost-effective option to aerial imagery to create high-accuracy elevation vector datasets for airports around the world, allowing them to meet the rigid requirements of Performance Based Navigation.

**Solution**

Tokyo-based DigitalGlobe master reseller NTT DATA procured WorldView-3 high-resolution 30cm images for several airports in Japan to demonstrate that cost-effective 30cm imagery meets the accuracy requirements of Performance Based Navigation.

**Results**

Exceeding accuracy standards, NTT DATA proved that DigitalGlobe 30cm imagery, at a cost of 70% or lower of aerial imagery, presents a viable and cost-effective option for airports around the world seeking to implement PBN.