

Improving cellular coverage in Rio de Janeiro

Telefonica Celular, one of the largest mobile telephone companies in Brazil, contracted IMAGEM, a GIS solutions company, to help them build a GIS database in order to plan and improve their cellular network. The goal was to simulate the actual cellular network coverage of Telefonica Celular in Rio de Janeiro.

As IMAGEM was originally hired by Telefonica Celular to provide all the data they needed to deploy their cellular network, they contracted IMAGEM once again to help them improve their network.

IMAGEM contracted a local aerial surveying company to obtain aerial photographs of Rio de Janeiro. With IMAGINE OrthoBASE, IMAGEM created orthophotos, and conducted aerial triangulation with OrthoBASE Pro to define the relationship between the project imagery, the sensor model and the ground. IMAGINE OrthoBASE Pro determined the position, rotation and internal geometry of the aerial sensor as they existed at the time of image capture for each exposure station, along with the X, Y and Z positions of any tie points.

IMAGEM also produced Digital Terrain Models (DTMs) of the area with IMAGINE OrthoBASE Pro. The accuracy of each DTM was determined and verified. Multiple images were then orthorectified using the DTMs.

With the help of Stereo Analyst, IMAGEM restored individual buildings, and aligned street and curb vectors within the orthophotos, and applied the result to the Base Building Heights.

Image visualization was used with ERDAS IMAGINE V8.6. Throughout this process, analysts categorized the results and display them in the IMAGINE Viewer. Once they had enough accurate data, IMAGEM produced Base Building Heights, a detailed 3D model of Rio de Janeiro depicting its topographic terrain, including each individual building.

The Base Building Heights were used in conjunction with third-party prediction software to simulate Telefonica Celular's network coverage.

With the help of ERDAS IMAGINE software, IMAGEM was able to provide Telefonica Celular a GIS database that allows them to generate better maps depicting wireless coverage in their area, as well as conduct simulations of wireless coverage in the city. As a result of these accurate simulations, Telefonica Celular employees have a better idea of their current coverage and can plan the best ways to optimize wireless service to their customers. In return, their customers can enjoy improved coverage and services.

Andrea Yegros



Base building heights of Rio de Janeiro. IMAGEM used ERDAS IMAGINE, IMAGINE OrthoBASE and Stereo Analyst to create base building heights of the city to help Telefonica Celular analyze their cellular network coverage.

