



Comprehensive geo-spatial data creation for Dammam urban area in the KSA

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The General Directorate for Surveying and Mapping (GDSM) of the Ministry of Municipal and Rural Affairs (MOMRA) in the Kingdom of Saudi Arabia (KSA) has the exclusive mandate to carry out aerial photography and produce large-scale detailed maps for about 200 cities and villages in the KSA. This presentation is about the comprehensive geo-spatial data creation for the urban area of Dammam, eastern KSA, that was founded on country-wide horizontal geodetic ground control using Global Navigation Satellite Systems (GNSS) within the MOMRA's Terrestrial Reference Frame 2000 (MTRF2000) that is tied to International Terrestrial Reference Frame 2000 (ITRF2000) Epoch 2004.0, and vertical geodetic ground control using precise digital leveling in reference to Jeddah 1969 mean sea level, and included aerial photography of 2,738 km² at 1:5,500 scale and 7,419 km² at 1:45,000 scale, full aerial triangulation, production of orthophoto maps at scales of 1:1,000 (800 sheets) and 1:2,500 (200 sheets) for 600 km², 1:5,000 (500 sheets) for 6,000 km², and 1:10,000 (188 sheets) for 9,000 km², and production of GIS-oriented highly-detailed digital line maps in various formats at scales of 1:1,000 (1,529 sheets) and 1:2,500 (461 sheets) for 1,000 km², 1:10,000 (125 sheets) for 6,000 km², and 1:20,000 (54 sheets) for 9,000 km². While aerial photography lasted from October 2003 until October 2004, orthophoto mapping lasted from April 2005 until April 2006. The line mapping has started in April 2005 and is planned to conclude in April 2008. The total cost has exceeded \$12 millions. Rigorous ISO-consistent quality assurance and quality control procedures have been in place.