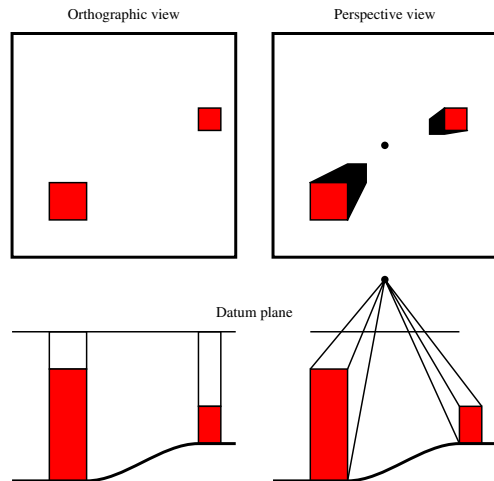


Orthophoto



Orthographic views project at a right angle to the data plane. Perspective views project from the surface onto the datum plane from a fixed location.



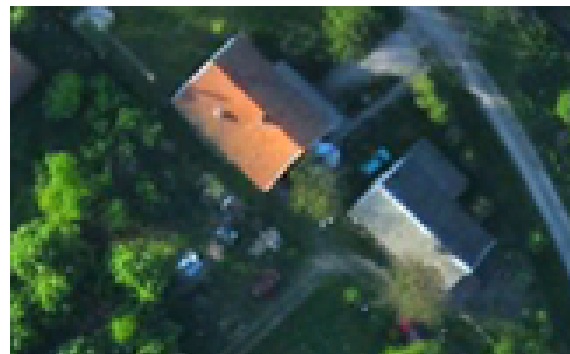
Aerophotogrammetry, Orthophoto from drone, Città Alta, Bergamo, Italy.

An **orthophoto**, **orthophotograph** or **orthoimage** is an aerial photograph or image geometrically corrected (“orthorectified”) such that the scale is uniform: the photo has the same lack of distortion as a map. Unlike an uncorrected aerial photograph, an orthophotograph can be used to measure true distances, because it is an accurate representation of the Earth’s surface, having been adjusted for topographic relief,^[1] lens distortion, and camera tilt.

Orthophotographs are commonly used in Geographic Information Systems (GIS) as a “map accurate” background image. An orthorectified image differs from “rubber sheeted” rectifications as the latter may accurately locate



This photo is properly projected on elevation model, yet on a single building scale, a small tilt is noticeable. This is an Orthophoto, but not a True Orthophoto (not all vertical features are reprojected).



This photo is assembled from several overlapping photos from UAV, completely removing any residual tilt of the buildings. This is a True Orthophoto.

a number of points on each image but “stretch” the area between so scale may not be uniform across the image. A digital elevation model (DEM) is required to create an accurate orthophoto as distortions in the image due to the varying distance between the camera/sensor and different points on the ground need to be corrected. An orthoimage and a “rubber sheeted” image can both be said to have been “georeferenced” however the overall accuracy of the rectification varies. Software can display the orthophoto and allow an operator to digitize or place linework, text annotations or geographic symbols (such as hospitals, schools, and fire stations). Some software can process the orthophoto and produce the linework automatically.

Production of orthophotos was historically achieved using mechanical devices.^[2]

1 See also

- Aerial Photography
- Digital Orthophoto Quadrangle (DOQ) and Digital Orthophoto Quarter Quadrangle (DOQQ)
- Leica Photogrammetry Suite Orthorectification Software
- GRASS GIS (i.ortho.photo module)
- Photogrammetry
- Photomapping
- TopoFlight
- Socet set Orthophoto Software
- U.S. Geological Survey
- Rational Polynomial Coefficient

2 References

- [1] Smith, Gary S. "DIGITAL ORTHOPHOTOGRAPHY AND GIS." ESRI Conference. <http://proceedings.esri.com/library/userconf/proc95/to150/p124.html>
- [2] BBC Tomorrow's World: How maps are corrected and updated using aerial photography and optical machinery. 18 December 1970.
- Bolstad, P., (2005), GIS Fundamentals: A First Text on Geographic Information Systems, Eider Press, White Bear Lake, MN, 2nd ed.
 - Demers, Michael N., (1997). Fundamentals of Geographic Information Systems, John Wiley & Sons.
 - Fernandez, E., Garfinkel, R. & Roman Arbiol (May–June 1998). "Mosaicking of Aerial Photographic Maps Via Seams Defined by Bottleneck Shortest Paths". *Operations Research*. **46** (3): 293–304. doi:10.1287/opre.46.3.293..
 - Petrie, G., (1977), Transactions of the Institute of British Geographers: Orthophotomaps New Series, vol. 2, no.1, Contemporary Cartography., pg. 49-70
 - Robinson, A.H., Morrison, J.L., Muehrcke, P.C., Kimerling, A.J., Stephen Guptill, (1995) Elements of Cartography: John Wiley & Sons Inc., Canada, 6th ed.
 - United States Geological Survey, US Department of Interior, USGS Fact Sheet May 2001 <http://erg.usgs.gov/isb/pubs/factsheets/fs05701.html>

3 External links

- United States Geological Survey
- National Digital Orthophoto Programs (NDOP) - Original Site via Wayback Machine
- National Digital Orthoimagery Program (NDOP)
- National Digital Orthoimagery Program Subcommittee

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