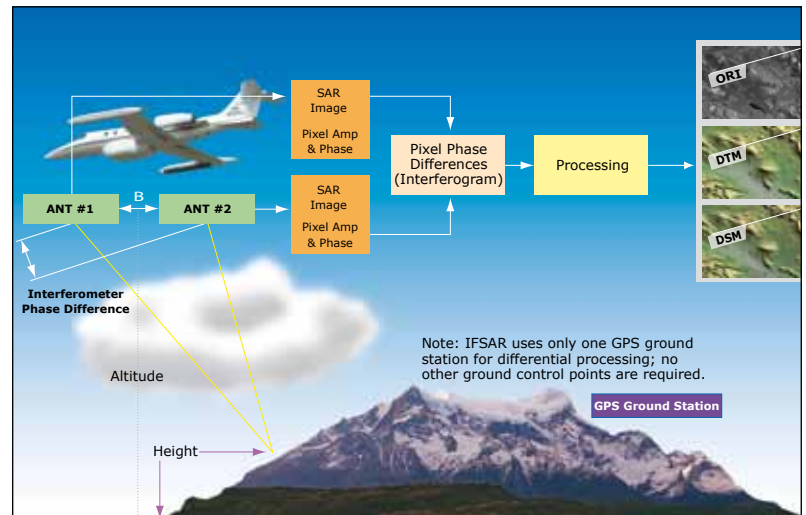


IFSAR Mapping Technology

Intermap's digital 3D mapping technology produces precise data, with rapid acquisition that can take place in nearly any operating condition

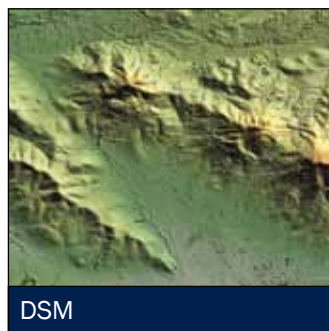
The Process

Intermap's proprietary airborne interferometric synthetic aperture radar (IFSAR) digital mapping technology is essentially a process of producing 3D map products by processing raw radar data collected by airborne IFSAR systems. Thematic information for a scene is derived from the synthetic aperture radar (SAR) images. Height information is obtained in a single-pass mode by using the phase difference between two coherent SAR images, simultaneously obtained by two antennae separated by an across-track baseline.



The Products

- Digital surface model (DSM)
- Digital terrain model (DTM)
- Orthorectified radar image (ORI)
- Elevation shaded image (ESI), a product that fuses the DTM with high-resolution optical images



The Demand

Demand for high-quality, low-cost IFSAR digital mapping data within the geospatial community is high. Continual advances in sensor development and georeferencing technologies, combined with exponential improvements of digital computing power, enable unparalleled functionality and flexibility in digital mapping. The highly accurate and affordable 3D digital mapping data afforded by our IFSAR technology enable a wide range of innovative geospatial solutions.

The Advantage

- Flexibility of system deployment
- Virtually nonexistent weather restrictions
- Profound cloud penetrating capability
- Rapid turn-around time
- Significant reduction in collection costs

The Objective

Spearheaded by our superior IFSAR mapping system, data collection for Intermap's NEXTMap® Europe countrywide 3D mapping program, which includes high-resolution elevation data and images for all of Western Europe, is commercially available. Data collection for Intermap's NEXTMap® USA countrywide 3D mapping program, which includes high-resolution elevation data and images of the 48 contiguous states and Hawaii, is scheduled for completion in the second quarter of 2010.

The Alternative

Several competing technologies, such as the more familiar airborne Light Detection and Ranging (LiDAR) system, are used to generate map products at various scales, details, and accuracies. However, experts in the geospatial community recognize the fact that airborne IFSAR has matured as a complementary or even competitive 3D mapping technology. Here's a comparison of IFSAR and LiDAR technologies:

The Comparison

Parameter	IFSAR / InSAR – Type II	IFSAR / InSAR – Type I+	LiDAR - Typical Industry Values
Collection Process	Collected from fixed-wing aircraft at 6km to 9km in single-pass mode.	Collected from fixed-wing aircraft at 6km to 9km in single-pass mode.	Collected from fixed-wing aircraft and helicopter platforms at 50m to 3.5km; may require multiple passes.
Maximum Collection Rates	~ 4,000km ² /hr	~ 4,000km ² /hr	~ 200km ² /hr
Wavelengths	X-band (~3cm). Penetrates clouds, haze, fog, dust, light rain, and snow.	X-band (~3cm). Penetrates clouds, haze, fog, dust, light rain, and snow.	IR (~ 1nm). Cannot penetrate clouds; heavily absorbed by water.
Maximum Operating Speed	~ 750km/hr	~ 750km/hr	~ 200km/hr
Ground Swath	5 – 9km	5 – 9km	0.7 to 1km
DTM Ground Sample Distance	5.0m posting	5.0m posting	0.75 – 3.0m posting
DTM Vertical Accuracy	1.0m RMSE	0.5m RMSE	0.1 – 0.5m RMSE
DTM Horizontal Accuracy	2.0m	1.0m	0.5 – 1.0m
Imagery Type	orthorectified radar imagery	orthorectified radar imagery	intensity gray scale image
Imagery Ground Sample Distance	~ 1.25m pixel size	~ 0.625m pixel size	~ 0.75 – 3.0m pixel size
Imagery Horizontal Accuracy	2.0m RMSE	1.0m RMSE	0.5 – 1.0m RMSE
Representative Pricing for Fully Edited DTMs	~ <\$40/km ² USD typical	~ <\$40/km ² USD typical	~ \$150 – \$350/km ² USD typical

Note: All LiDAR comparisons are based on industry averages and will vary based on atmospheric conditions, flight patterns, and project scope. Sources: The National Oceanic and Atmospheric Administration Coastal Services Center, some LiDAR projects can run as high as \$772/km² Source: http://www.csc.noaa.gov/crs/rs_apps/sensors/LiDAR.htm#cost, June 26, 2008; Maune, D., 2007. Digital Elevation Model Technologies and Applications: The DEM Users Manual, 2nd Edition, ASPRS Bethesda Maryland, 655 p.; The International LiDAR09 Mapping Forum http://www.LiDARmap.org/basics/presentations/1_Riegl.pdf.

The Benefit: Precision Elevation Data for Less Money

Our IFSAR data collection process wasn't developed to satisfy everyone's mapping needs. However, depending on the scope and requirements of your particular project, IFSAR is a proven alternative to LiDAR. In addition, IFSAR's ability to complement a LiDAR end product with precise, less-expensive elevation data and geometries can save you and your organization considerable time and money.

Intermap is proactively meeting the growing global demand for superior, low-cost digital elevation datasets, imageries, and geometric models. Our experienced team of airborne IFSAR technology experts continues to take the geospatial mapping industry to an incomparable level of accuracy and affordability.

Likewise, our NEXTMap® suite of commercially available products, along with our custom collections program, has enabled a wide range of geospatial solutions for numerous commercial, government, military, and consumer applications worldwide.

The Conclusion: Contact Us Today for More Information

Call toll-free 1-877-837-7246 or visit us online at www.intermap.com to learn more about how mapping data generated by our IFSAR technology can quickly and affordably enable your geospatial solutions.