Products Used:

- GeoMedia®
- ImageStation®
- PhotoScan digital photogrammetric scanner
- ImageStation Stereo Softcopy Kit
- GeoMedia Terrain
- Dynamo
- VPF Validator

Key Benefits:

- Portugal's armed forces are in a position where they can purchase and implement most weapons found on modern battlefields
- Institute can share data with allies – no matter the format
- Institute is assured to have high-quality mapping products
- Portugal has forged valuable new ties with geographic institutes in other countries

Profile:

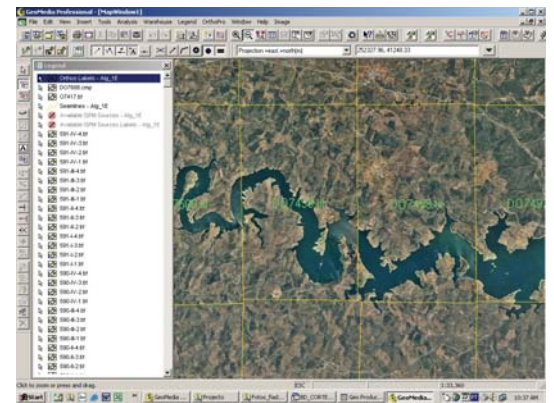Name – Geographic Institute of the Army, Portugal

Established in 1932 as Army Cartographic Services, the modern-day Instituto Geografico de Exercito is tasked with providing geographic information and generating maps for the Army of Portugal, other branches of the Portuguese armed forces, and the civilian community.

Portugal Redesigns Map Production Workflow to Accommodate NIMA Standards

Geographic Institute of the Army, Portugal, forges valuable new ties with geographic institutes in other countries by adhering to NIMA standards

The Challenge:

In 1977, Instituto Geografico de Exercito (IGeoE) acquired the first pieces of computer assisted mapping equipment from Intergraph. Over the next nine years, the group assembled the automatic cartography system, a completely computerized workflow – from acquisition to output – for production of maps and geographic information at its Lisbon headquarters.

IGeoE's automated production stream is built upon ImageStation software and hardware from Z/I Imaging, an Intergraph company, including the ImageStation Stereo Softcopy Kit for digital photogrammetric processing. IGeoE also uses Z/I Imaging's PhotoScan scanners at the front end of the processing workflow.

In 1996, the Army of Portugal decided to participate in the generation of NIMA Vector Map Level 1 (VMap1) and Digital Terrain Elevation Data (DTED) Level 1 and 2 products. Often referred to as a Vector Smart Map, VMap is enhanced with the addition of an associated database of geographic information typically stored on a compact disk.

IGeoE decided to redesign its existing production stream and take part in the generation of new military products for several reasons:

- NIMA had essentially created an international military standard with the VMap and DTED products.
- By regularly producing and using VMap and DTED products, IGeoE put Portugal's armed forces in a position where they could implement most of the weapons found on today's modern battlefield.
- IGeoE wanted to be compatible with allies – to use the same geographic information to ensure the safety and accuracy of military operations when these units work together in a coalition.
- IGeoE adopted NIMA standards for quality assurance. IGeoE was guaranteed to have high-quality mapping products for activities that require interoperability among international military forces.

Because of its extensive output of cartographic material, IGeoE was able to use existing source data to create the VMap vector layers. Much of this information was already contained in IGeoE's national map series, grids, and raster products. The challenge was taking these data layers in their various formats and map projections and converting them to VPF for use in VMap1 products.

The Project Objective:

- Redesign IGeoE's existing production stream and take part in the generation of new military products that would:
    - Help put Portugal's armed forces in a position where they could purchase and implement most weapons found on modern battlefields
    - Make IGeoE compatible with allies
    - Assure that IGeoE has high-quality mapping products

The Solution:

IGeoE devised a viable solution by leaving the existing production stream intact and adding a new processing phase at the end, solely for generation of the NIMA products.

The organization selected Intergraph's GeoMedia technology as the add-on module to produce the VMap series because it could retrieve raster and vector data sets in any format and convert them into any new format and projection. IGeoE personnel programmed GeoMedia to automatically transform digital data from the national map series, grids, and raster products into the desired Vector Product Format and WGS84 coordinate system requested by NIMA.

IGeoE also added Intergraph's Dynamo base-mapping product to the VMap processing stream to edit topology in real time, automatically validating the geometry of feature data to ensure that correct spatial relationships are maintained among features and attributes during production. GeoMedia then input the modified feature layers into the appropriate data dictionary as mandated by the VPF. Finally, IGeoE incorporated another Intergraph tool, VPF Validator, into the workflow to ensure that each product met VPF standards.

For the generation of the DTED 1 and 2 products, IGeoE purchased Intergraph's GeoMedia Terrain, full-featured software for analyzing and modeling spatial data in three dimensions. GeoMedia Terrain was added to the end of the existing workflow to extract cells from the national topographic maps and resample the grids into the specified DTED post spacing.

As a result of participating in the program, IGeoE and the armed forces of Portugal may share map data with NIMA and other cooperating nations. Through this program, Portugal has forged valuable new ties with geographic institutes in other countries.

National Imagery and Mapping Agency (NIMA) is now known as National Geospatial-Intelligence Agency (NGA).

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