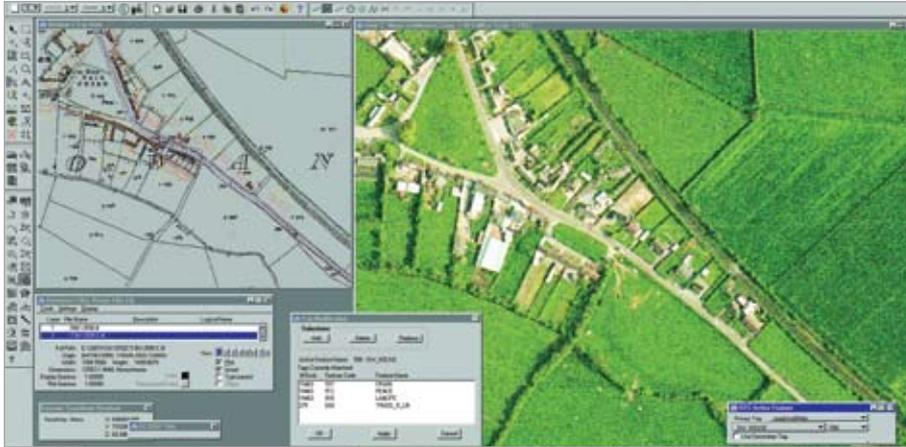**INTERGRAPH**

Softcopy Photogrammetry Significantly Enhances Ireland's Geographic Data

CONTRACTOR MASON LAND SURVEYS USES INTERGRAPH'S Z/I IMAGING TECHNOLOGY TO SPEED UP VECTOR MAPPING COMPLETION FOR THE ENTIRE COUNTRY

THE CHALLENGE:

As the national mapping agency of Ireland, Ordnance Survey Ireland (OSi) is responsible for developing and maintaining the country's definitive national map database. The mapping program was part of an overall plan to significantly enhance OSi geographic data and its products and services offerings.

The program's new map data will serve as the official geographic information used to conduct numerous government-related activities, such as planning and development. OSi uses this data to develop a variety of paper and digital products for use by private sector customers.

Project specifications called for contractors to capture data from 1:40,000 aerial photography using aerotriangulation results supplied by OSi. This data had to be edited to provide fully completed 1:5,000 map sheets for delivery in NTF format for quality assurance.

At 1:5,000-scale, the requested vector maps must contain all key linear features, including roads, railways, water bodies, and building footprints. OSi also requested the contractor to "multi-code" features as necessary, meaning that some features would be annotated more than once. For example, a road that also serves as a townland boundary is coded as both a road and statute boundary feature during digitization.

THE PROJECT OBJECTIVES:

- Outsource photogrammetric services to speed up the completion of new vector mapping for the entire country of Ireland

- Apply state-of-the-art softcopy photogrammetric technology to complete contracted work on time and within stringent accuracy specifications

- Capture data from 1:40,000 aerial photography using aerotriangulation results supplied by OSi

PRODUCTS USED:

- ImageStation®

- ImageStation Stereo Softcopy Kits

- ImageStation Digital Mensuration

- ImageStation Stereo Display

- ImageStation Feature Collection

KEY BENEFITS:

- Accurate mapping projects enable Ireland to keep pace with population growth and development

- Photogrammetric data used to develop paper and digital products for private sector customers

PROFILE:

Name – Ordnance Survey Ireland

Web site – www.osi.ie
Ordnance Survey Ireland strives for excellence in providing quality mapping and geographic information services to meet society's needs. The organization has a credible history of promoting advances in practice and technology, and is one of the most technologically advanced organizations of its kind in the world. Ordnance Survey Ireland has invested heavily in the use of developing mapping technology since the 1970s, which allows it to play an increasingly sophisticated role in today's information industries. Its customer base spans all sectors of the economy and includes government departments and offices, local authorities, utility companies and the construction industry, as well as members of the general public.

Size – 302 employees
  – 8.5 million euros per annum from activities

- Provide fully completed 1:5,000 map sheets for delivery in NTF format
- Provide vector maps containing multi-coded key linear features

THE SOLUTION:

To map these lands in an adequate timeframe, OSi contracted Mason Land Surveys, a surveying and mapping company offering GIS, photogrammetric, cartographic, and computer-aided drafting services to clients across Europe, as one of five firms to perform the photogrammetric work in phase one. The organization is well equipped to handle a project of this size with a short turnaround. The firm's Dunfermline facility is outfitted with softcopy photogrammetric technology provided by Intergraph's Z/I Imaging.

"We have found the mapping results from contractors with softcopy photogrammetry are far better than with manual methods," said Jack O'Sullivan, 1:5,000 Mapping Manager for OSi. "At the start of the first year, only three of the five contractors exclusively used softcopy technology, but the others eventually converted to keep pace with the workflow."

The centerpieces of the Mason technical laboratory are three Z/I Imaging ImageStations, fully integrated hardware/software workstations designed specifically for softcopy photogrammetry, and seven ImageStation Stereo Softcopy Kits (SSK). This SSK software runs on a standard Microsoft® Windows-based PC, essentially converting it to an automated photogrammetric workstation.

Mason selected the Z/I Imaging systems to take advantage of the robust software capabilities that enable the mapping firm to complete end-to-end digital image processing and production on the workstation. As the 1:5,000 mapping preceded, Mason found that one of Z/I Imaging software's greatest assets was the ability to create customized routines.

The entire 1:5,000-scale project will ultimately include 4,300 map sheets, each covering 1200 hectares. Aerial photography covering the project area was delivered from OSi in a series of digital TIFF files, each about 1 gigabyte in size.

After importing the image files, Mason technicians accessed the ImageStation Digital Mensuration (ISDM) software to review and manually re-compute the interior orientations of the stereo model for each image using control point data supplied by OSi. Mason technicians converted the approved stereoimagery file to JPEG for easier manipulation. By using the ImageStation Stereo Display and ImageStation Feature Collection modules, vector features were collected – essentially turning the viewing screen into a 3D digitizing table, allowing the technicians to collect and edit features onscreen using the cursor and mouse.

By taking advantage of so many cutting-edge photogrammetric capabilities, Mason undoubtedly exceeded what would be considered normal operating procedures, but the firm believed leveraging the full arsenal of softcopy features would achieve the desired accuracy specifications. Judging from OSi's positive response, the technology paid off.

ABOUT INTERGRAPH

Intergraph is the leading global provider of spatial information management (SIM) software. Security organizations, businesses and governments in more than 60 countries rely on the company's spatial technology and services to make better and faster operational decisions. Intergraph's customers organize vast amounts of complex data into understandable visual representations, creating intelligent maps, managing assets, building and operating better plants and ships and protecting critical infrastructure and millions of people around the world.

For more information, visit www.intergraph.com.