Reprinted from

Seventh International Symposium

Machine Processing of

Remotely Sensed Data

with special emphasis on

Range, Forest and Wetlands Assessment

June 23 - 26, 1981

Proceedings

Purdue University
The Laboratory for Applications of Remote Sensing
West Lafayette, Indiana 47907 USA

FRIS: AN OPERATIONAL GEOGRAPHIC INFORMATION SYSTEM

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ABSTRACT IN LIEU OF MANUSCRIPT

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One of the most significant aspects of the Forest Resource Information System is not that it is a Geographic Information System with new capabilities, but rather it is in use operationally in a production mode. This system stems from the unique background of government, univeristy, and private industry working together in a jointly sponsored project. Private industry's main interest was not in the production of another experimental Geographic Information System, but in the production of an operational system which would provide a return on its investment.

In a Geographic Information System the major two items of interest are the different data types which it is capable of utilizing and the different processing capabilities it possesses. Traditionally, systems have used either gridded data such as image raster data, or graphical data such as polygons. Just recently there has been the emergence of systems that make a significant use of tabular data in conjunction with the other data forms. Most systems are either raster based or polygon based; however, there are now evolving a few hybrid systems that have capabilities in both domains. The FRIS system utilizes gridded data such as Landsat data, graphical data such as polygons, lines, and point data, and also large quantities of tabular data from an existing inventory control database. Associated with each data type are processing capabilities that have existed for some time now. Landsat classification and image analysis software have been experimentally tested and operationally used. Computer graphics is now a multi-billion dollar industry. Database management systems for tabular data are widely in use and available.

The uniqueness in processing capabilities of our system stems not from utilizing three separate standardly available systems, but rather in integrating these as subsystems into a system capable of interacting with any combination of the three subsystems. When analyzing the gridded Landsat data, the graphical map information may be overlaid to aid in determining ground location. Our forest ownerships are subdivided into administrative units of about 2,000 acres each. During the classification of Landsat data covering a forest ownership, the administrative unit boundaries may be overlaid on the Landsat data and be utilized to select irregularly shaped training areas. The graphical map data may be captured, manipulated, and edited with interactive graphics software, or the initial data capture may be aided through the batch input of existing digitized maps or maps digitized via automated methods. Graphics capabilities alone provide a worthwhile investment, but when linked to a tabular database management system it provided an analytical tool. We may bring graphical map data up on a screen, outline an area of interest, and have a summary of the tabular data produced based on the area we chose through the graphics. On the other hand, we can interrogate the tabular data and have it produce a map of the results that satisfy a specified search criteria. For analytical purposes, in order to directly interface the Landsat data with the graphical map data, the classified Landsat data is converted to polygon form. At this point the classified Landsat data may be compared to cover type maps. Using the tabular data to aggregate each into equivalent cover types, maps are produced and summaries generated of areas where the Landsat classification is in disagreement with the cover type map. The tabular data in our system not only interacts with the map data and Landsat classification but also serves as input to long range planning models.

Our Geographic Information System is not complete; it is still evolving as new capabilities are added and methodologies change. The most important capability a system may have is the capability to change via modular design and adequate support. The moment a system is said to be complete is the moment it becomes obsolete.