Geographic Information Systems Resources

Definition

A superabundance of information about geographic areas is continually being collected for analysis. This information comes in a wide variety of formats, at various scales, and represents a large number of phenomena. To sort out, analyze, model, store, and distribute this information in a useful form, computerized **geographic information systems** are now being used. Geographic Information Systems (GIS's) are "systems of hardware, software, data, people, organizations, and institutional arrangements for collecting, storing, analyzing, and disseminating information about areas of the earth.

"Requisite functionality for a GIS consists of:
1) the ability to create, edit, and delete geographically structured data;
2) the ability to link locational and attribute data;
3) the ability to perform spatial analysis functions, including analytical map overlay of multiple data themes and network analysis;
4) the ability to display geographic information.

"Geographic data editing and network analysis are both facilitated by use of a topological data structure that describes objects as points, lines, and areas and records the relationships of incidence and connectivity among them." *

A number of resources have become available to support the implementation and use of geographic information systems. These include documentation in the form of newsletters, journals, and books, GIS training courses, and other formal institutional and organizational support structures.

GIS News

A growing number of newsletters on Geographic Information Systems are becoming available, to keep users abreast of changes and new applications of the technology. Major GIS Newsletters include:

FDC (Federal Digital Cartography) Newsletter
Federal Interagency Coordinating Committee on Digital Cartography
Department of the Interior, U.S. Geological Survey
516 National Center, Reston, VA 22092

GIMS (Geographic Information Management Systems) News
GIMS Committee
American Society for Photogrammetry and Remote Sensing/
American Congress on Surveying and Mapping
210 Little Falls Church, VA 22046

The GIS Forum
THG Publishing Company
16306 Sir William Drive, Spring, TX 77379-7638

GIS Review
Land Systems Corporation
73 Daniel Street, Portsmouth, NH 03801-9910

GIS World
GIS World, Inc., P.O. Box 8090, Ft. Collins, CO 80526

The above newsletters are devoted to geographic information systems. A large number of other newsletters examine such issues as a portion of their news, or examine specific GIS systems

* Definition developed by the Center for Urban Studies, Portland State University, for the ACSM's Geographic Information Management Systems Committee. Published in the Proceedings of the 1989 ASPRS/ACSM Annual Convention, and presented at the 1989 ASPRS/ACSM Annual Convention.

exclusively. A list of newsletter examining GIS issues and remote sensing is available from James Merchant or Loyala Caron, at the Center for Advanced Land Management Information Technologies (CALMIT), Conservation and Survey Division, University of Nebraska-Lincoln, 113 Nebraska Hall, Lincoln, NE 68588-0517; 402/472-2567.

Several journals also provide an in-depth look at GIS issues. Major journals include:

The American Cartographer
Journal of American Congress on Surveying and Mapping (ACSM)
210 Little Falls Street, Falls Church, VA 22046

International Journal of Geographic Information Systems
Taylor & Francis, Inc.
242 Cherry Street, Philadelphia, PA 19106-1906

Mapping Sciences and Remote Sensing
V.H. Winston & Sons, Inc.
7961 Eastern Avenue, Silver Spring, MD 20910

Photogrammetric Engineering & Remote Sensing (PE&RS)
American Society for Photogrammetry & Remote Sensing (ASPRS)
210 Little Falls Street, Falls Church, VA 22046

Photogrammetria
Journal of the International Society for Photogrammetry & Remote Sensing
Journal Information Center, Elsevier Science Publishing Company, Inc.
52 Vanderbilt Avenue, New York, NY 10017

Major GIS Systems

GIS's are commonly used to assess environmental impacts, evaluate site suitability, detect change, manage resources, and model the effects of changes in environmental variables across a landscape. They can be applied to many land-related issues, potentially resulting in large cost savings to installations. Strides in remote sensing and computer technology have resulted in declining hardware costs, thereby further increasing their popularity.

Major GIS systems include: Arc/Info, DeltaMap, EPPL7, ERDAS, GeoVision, GRASS, Intergraph, MIPS, MOSS, PMAP, and SAGIS.

Point of Contact

Further information on geographic information systems is available from the Land Analysis Group of USA-CERL. This group, and the GRASS Information Center, can also provide information on the acquisition of the Geographic Resources Analysis Support System (GRASS) GIS, and the GRASS GIS newsletter *GRASSClippings*. Contact the U.S. Army Construction Engineering Research Laboratory (USACERL), P.O. Box 9005, Champaign, IL 61826-9005; 217/373-7220.