M E M O R A N D U M

Several organizations we've worked with recently have expressed their interest in ongoing, free flowing communications between themselves and ESRI. The attached newsletter is intended to be a step in that direction.

We hope that it will be a forum for sharing, and that the communication channel will be a "two way street". We want you to know what we've accomplished in the way of new technology and new experience that may benefit you. On the other hand, we are anxious to know about your uses of our technology, what new needs or ideas you have, and whether there is something we can do to support you.

To create an ongoing opportunity for us to share with you, for you to share with us, and for you to share with each other, we intend to send a newsletter around twice a year, normally in July and January. We plan for the contents to be a synthesis of our inputs and your inputs. For future newsletters, we will contact you before publication to give you the opportunity to share with us and each other what you are doing.

Our first newsletter (enclosed) includes the challenges we've been working with during the last year or so, the things we are currently working on, and those things we plan to accomplish over the next several months. We would appreciate hearing from you concerning your comments on our direction in this endeavor, and any thoughts you might have about what would help you meet your short range needs and long term goals. These comments would begin your communication with us prior to the next newsletter.

Another step we would like to initiate to improve communication back and forth is an annual ESRI Software Users Conference. This was suggested to us by Wim Schoonhoven (among others), an Urban and Regional Planner with Pennsylvania Power and Light, who thought a round table discussion of past and prospective users would expand everyone's insight regarding what is and what should be possible with such technology. It is our plan to hold the first such conference at ESRI in early 1980. We hope these discussions will prompt breakthroughs into new areas by all of us.

As you respond to this newsletter, please include a comment regarding this users conference, and indicate whether you would attend and/or send a representative.

ESRI

In closing, I want to mention that we are proud of the past accomplishments we've made with your help. Now it is time to move on. We want your support as we move on, as we plan to support you. We totally feel the importance of our ongoing relationship and the benefit of mutual interaction.

We look forward to hearing from you.

Best wishes and warm regards,

Jack Dangermond
Director

Bill Matteson
Editor

ESRI NEWSLETTER

COMMAND PACKAGE FOR THE GRID SYSTEM

Late last year, we developed a question and answer "menu" type of pre-processor for the GRID system. It's called Command Package for the GRID System and is operational on a DEC mini-computer. Control files are created with COMMAND onto DEC discettes and transmitted to any host computer to drive the programs in the GRID system.

The beauty of COMMAND is the ease and speed with which GRID related control files are created, and the utility of this, especially relative to sporadic users of the programs. Capabilities include a tab feature to aid entering the GRIDMODEL commands (the nine statement user oriented language within GRID MAP/MODEL that enables planners, geographers, and others with no computer experience to easily program their own models).

We just completed the transfer of COMMAND onto the PRIME system and expect to follow that with development of a COMMAND system for the PIOS output programs (POLYPLOT, AUTOPLOT, POLYMODEL, etc.).

CORRIDOR LOCATION SUITABILITY

A relatively new program in our inventory is COLOS (Corridor Location Suitability). It uses a model from GRID MAP/MODEL (formerly GRID II) that defines in relative terms the most and least suitable cells for a type of development, such as railway or transmission line placement.

The model in fact assigns a 'cost' per grid cell and thus defines a cost surface. All the user need do is define on this cost surface an origin point and a destination point. COLOS examines the cost surface and defines the least cost path between the two points (a map of the COLOS-defined least cost path used in combination with a subsequently derived ROUTE EVALUATION bar chart visually depicting the impacts per variable makes a very effective presentation).

NEW DIGITIZING TECHNOLOGY

Most of you have our software and are interested in data capture as well as analysis subsequent to capture. Whether your needs relate to data enhancement, updating, or initial automation, digitizing is normally a vital concern.

Most of you know we've had several iterations of technology change recently. Briefly, we have changed from double digitizing to chain/intersection digitizing. The principal is that the intersections (generally nodes where three or more polygons come together) spatially define a given polygon. The chains (arcs) define

the polygon boundaries between the intersections. As a polygon is automated, all intersections are digitized, but arcs are only digitized if they have not been digitized as part of another polygon. Thus, the efficiency of double digitizing is retained (polygons are uniquely defined by the intersections, thus minimizing post processing) and the inefficiencies are eliminated (boundary segments are digitized only once). We use a multi-key cursor and define both the intersections and chains on one pass over the map. We have special processing programs to transform a chain digitized file into a double digitized file for overlay analysis, modeling, etc.

By the end of August we will have four stand alone digitizing stations at ESRI. To further enhance data capture efficiencies, we are currently adding interactive graphic capabilities to our digitizing process. We feel that with such graphics, maps will come off the digitizer close to 100% "clean".

LANDSAT, DIRECT ACCESS, DATA BASE MANAGEMENT, INTERACTIVE CAPABILITIES AND ENHANCED OVERLAY

Much of our effort during the past year has been devoted to making existing software better and making software transferral smooth. We wanted to do this to better support the rapidly increasing demand for our software. Comments from the four installations we have already had this year (University of South Carolina, NASA GODDARD, Pacific Aerial Survey Company in Japan, and NASA Ames) indicate that, on the whole, these goals have been achieved. It's time to move on, meet new challenges, and cross new thresholds.

Regarding data capture, we have committed ourselves and our resources to investigating LANDSAT capabilities and determining how to interface LANDSAT data into automated geographic information systems. Images from LANDSAT are now being used by various agencies to inventory crops, map forest cover, classify land use, etc. LANDSAT is appealing because of its objectivity, frequency of coverage, cost effectiveness, availability in digital format, availability for very large areas, and its potential for temporal and spatial analysis using change detection techniques. Work is still necessary for such things as classification schemes and accuracy assessment.

ESRI recently transferred LANDSAT image gridded data into a format usable with our GRID System and is currently involved with NASA Ames in an accuracy assessment project. In an independent effort, the University of South Carolina has successfully interfaced LANDSAT data to our GRIDPLOT program. We see a potential for image processing relative to automated geographic information systems.

Regarding data use, we want our basic systems to be more flexible and interactive than they are now. For this, we are channeling resources to: 1) create direct access file structures for GRID and PIOS; 2) increase the power of the overlay program to digitally create terrain unit files to enhance polygon modeling capabilities; 3) construct a data base management system to aid users administratively; 4) enhance our systems with interactive capabilities. In general, it's our intention to make our basic system faster, more usable, and thus more cost effective. We plan to accomplish these goals within the next 12-18 months.

TURNKEY HARDWARE/SOFTWARE SYSTEMS

Historically, our philosophy has always been to maintain machine independent software. Lately, we have been getting more and more inquiries about furnishing a turnkey system. The outcome is that some of our recent responses to requests for proposals have included hardware as well as software.

As a result, we have contracted to furnish several digitizing stations (software, hardware and training), and the PASCO installation in Japan included a system that duplicates ESRI (PRIME computer, Houston Instruments plotter, TALOS digitizer, DEC mini-computer, CRTS, total software and training).

As resources permit, we hope to enhance the flexibility with which we can support potential users. While our software will always have a machine independent version to make use of a client's existing hardware, we also plan to generate total hardware/software Turnkey systems, to include a smaller and even less expensive mini-computer configuration. This will support clients without hardware, as well as clients with saturated systems where access is limited and where an in-house mini-system could be used to augment overall capabilities.

INCREASING WORLDWIDE EXPERIENCES

In addition to the technical committments mentioned, ESRI has been moving ahead in other directions. Involvement in projects worldwide has been rapidly increasing. For instance, we have been, and are, involved in several projects in the Middle East, Europe, South America, and Asia.

Also, I was fortunate to have been invited to Mainland China to present a ten day seminar on geographic information systems and environmental planning methods to selected officials of the Academy of Science Institute of Geography. They were very receptive to our technology and efforts are underway to purchase our software.

Chinese planners have a comprehensive approach to Land Planning which is impressive. All environmental aspects are considered. Because of its thoroughness, it is time consuming and that is where we hope to support them with our technology.

MORE OFFICE AND MORE PEOPLE

The committments mentioned and expanding project workloads will require significant resources. The expanding workload over the past year has already mandated another expansion of our facilities. Work is currently underway to add about 2000 square feet to our work area. This will expand our facilities by approximately 20%. Effectively, the new configuration will allocate about half of this new area to the professional division and half to the technical division.

Personnel-wise, Mike Larrance has opened an ESRI associate office in San Francisco, and Jerry Christenson has been added to the main office staff. This is an exciting challenge and opportunity for Mike, and is also a real opportunity for ESRI in general, since Jerry comes to us from NASA, Goddard, with an extensive background in LANDSAT capabilities and image processing, and this supports our goals in this area. To further support our Technical Division goals, we have a new programmer with us, Dixie Hardy, who has a background in data base management. Overall, our processing and general staff has grown to where we now have about 50 people on board.