

# Fungis

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Newsletter of the Far North Queensland GIS Group Inc

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## CHAIRMAN'S REPORT

"GIS in Progress", the theme for our coming seminar on June 14th, can be interpreted as both the role of GIS in a progressing community and the progress achieved by established systems. It is interesting to note that our first Group seminar in 1989 was entitled "Getting Started", at which time there were no established systems in our Group area.

The extent of progress since then was graphically demonstrated (no pun intended) at our April meeting in Mareeba. The information exchange papers by members were very well received, resulting in our most successful meeting to date. I'm sure our invited Local Authority representatives Jim Chapman (Atherton Shire) and June Rees (Mareeba Shire) have gained a greater appreciation of GIS applications.

Congratulations to our Group Publicity Officer, Bob Peever, who organised the event.

The Group Annual General Meeting will be held during the June seminar and members should consider nominations for office bearers at this meeting.

Peter Rey, our overworked Secretary, has arranged an excellent line-up of speakers for the seminar, so I would encourage all members to attend.

.....  
Charles O'Neill, Chairman

## GIS PACKAGE AIMED AT LOCAL GOVERNMENT

Ernst & Young have launched INFOCAD, a geographic information system (GIS) designed to assist local government, lands departments, utilities and other organisations in urban planning and resource planning. Brad Spencer, general manager of information systems at Ernst & Young, said that Infocad offers the smaller organisations a full complement of GIS functionality which can be

run on personal computers or the popular Unix workstation platforms at significantly less cost than other GIS systems on the Market.

Infocad's data structure supports non-redundancy of points, fast clipping, and filtering algorithms which enable it to yield very fast response times, according to the company.

It also offers an integrated SQL database and terrain modelling and image processing modules, which provide users with CAD functionality.

In June 1990 Ernst & Young established a special business unit to handle distribution and support for Synercom's GIS product, INFORMAP, which is aimed at large utilities and government departments requiring hundreds of workstations and sophisticated corporate databases.

With the launch of Infocad, we now have two complementary products in the GIS market, Informap for the high-end corporate GIS user and Infocad for the single station or networked stations low-end user, Spencer said.

#### **'UNDERSTANDING GIS' - The Arc/Info Method**

ESRI have released a new workbook to help users learn Arc/Info software. 'Understanding GIS' teaches the basics of GIS in the context of completing an Arc/Info project. A series of 'hands on' exercises leads users through completion of the steps

involved in a typical GIS project; developing a digital spatial database, performing spatial analysis, creating a map, and generating a report. Although specific to a particular project, the approach presented can be modified and applied to many of the functions for which GIS is used.

Lessons 1 and 2 introduce the basic concepts of GIS and Arc/Info software. An on-line tutorial in lesson 1 presents some of the functionality of GIS; a series of exercises in lesson 2 explains the Arc/Info data model.

Lesson 3 provides an overview of the steps involved in a GIS project and presents information about designing a spatial database. It also introduces the details of the sample GIS project.

Lessons 4 through 9 guide you to project completion and reinforce the concepts introduced in earlier lessons. Each of these lessons has a similar format emphasising learning by doing. More specifically, lessons 4 through 7 develop the geographic database; lesson 8 guides you through geographic analysis; and lesson 9 explores the options for presenting the results of the analysis, specifically maps and reports.

Lesson 10 introduces Arc/Info customisation. Capabilities include menus, command files and end-user applications.

Rounding out 'Understanding GIS' are sections containing

# THE RIGHT KEY TO YOUR GIS FUTURE

Installing a Geographic Information System  
is a major investment for any organisation.

So it is vital to take a close look at some of the factors  
that will decide the degree of success of your installation.

## How well accepted is the software?

According to Dataquest (a subsidiary of Dunn & Bradstreet), ARC/INFO is the world-leading GIS software with over 6,000 sites and a growth rate of 40%.

Being an ARC/INFO user is much more than having a copy of the software. It's about sharing GIS needs and experiences through access to user groups, and national and international conferences. It's also about you having an important say in future system developments.

## What is the software development strategy?

ARC/INFO has an enviable reputation for providing a proven yet continually evolving system. The system today is radically different to the system of three years ago. Yet ARC/INFO users have been able to move from one revision to the next and maintain complete system and data compatibility.

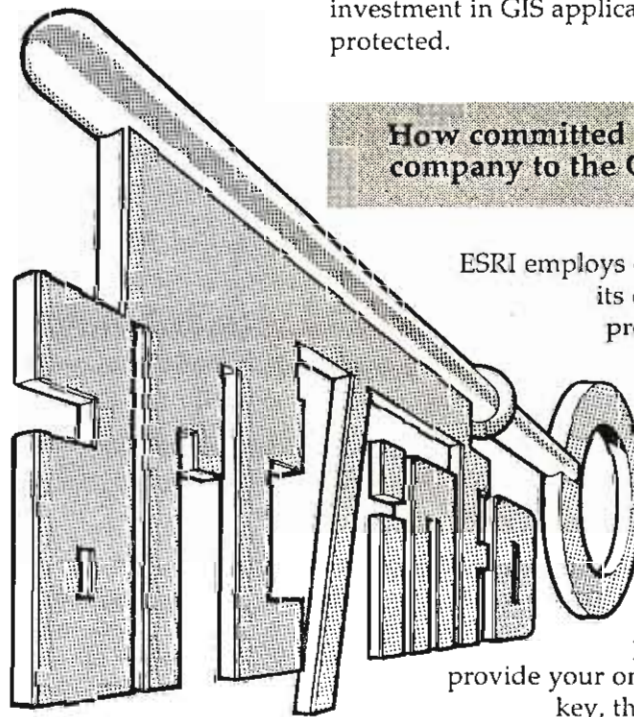
## Where is the software company going?

ESRI is financially strong and debt free. In times of business shake-outs, ESRI's market share in the GIS industry provides a guarantee that your investment in GIS applications is well protected.

## How committed is the software company to the GIS industry?

ESRI employs qualified professionals in its offices around the world, professionals you can work with, and not just sales people.

The ESRI philosophy is to strive for excellence in all aspects of the technology, a philosophy that will help provide your organisation with the right key, the key to your GIS future.



ARC/INFO is a registered trademark of Environmental Systems Research Institute, Inc.



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sample maps from Arc/Info user sites, illustrating a variety of GIS applications, and an extensive glossary of GIS and Arc/Info terms.

Each lesson includes a series of exercises using Arc/Info on an actual database. These exercises build on each other, so that taken together they lead to completion of the project. Most lessons also include optional advanced topics and exercises. References for further reading at the end of each lesson guide users to additional sources of information on the topics presented. ESRI state the workbook can be completed in 4 to 5 days.

Although the workbook lessons will lead you through the sample project from beginning to end, supplementary datasets provided let you begin any lesson without previously completing the previous one. Thus, if your job involves only certain aspects of GIS production, or if you need to learn about certain aspects of the GIS process, you can complete only the applicable lessons, and then complete the remaining lessons as needed at a future date.

Mossman Central Mill has obtained the workbook and software and I shall 'attack' them as soon as a heavy workload permits. I will report back in a future Newsletter.

Alan Stafford

## SPARKS FLY WITH SUN'S LATEST WORKSTATION

The SPARCstation 2 delivers a speed of more than twice that of Sun's previous SPARCstation 1+, according to the company. Models in the new series include : SPARCstation 2 - the base system with 19" monochrome display; SPARCstation 2GX for accelerated colour 2-D or 3-D wireframe graphics; SPARCstation 2GS for full , accelerated true colour 3-D solids modelling; and the SPARCstation 2GT - for five times the performance of the GS. All systems in the line achieve 21 SPECmarks, or 28.5 MIPS and come standard with 16 Mb of memory. The entry level SPARCstation 2 is priced at \$27,995; the high-end 2GT is \$99,995. These prices are ex tax.

## MapInfo TRAINING COURSE

ERSIS Australia Pty Ltd are planning to run a 3-day MapInfo training course in Cairns immediately prior to the FNQGIS Group annual seminar in June. It is planned to run the course from the 11th to 13th of June. People interested in enrolling in the course can contact Jenny Forsythe at ERSIS on (07) 891 1377.

## 1991/92 ANNUAL MEMBERSHIP SUBSCRIPTIONS ARE NOW DUE

Members are reminded that their annual membership subscriptions are now due. The fees remain unchanged at \$10 for Individual members and \$30 for Corporate members. An application form is included with this Newsletter.

# SUMMARY OF THE DESIGN AND APPLICATION OF THE FOREST RESOURCES INFORMATION SYSTEM

## SOLOMON ISLANDS NATIONAL FOREST RESOURCES INVENTORY

by Walter Mayr  
ERSIS Australia Pty Ltd  
Ph: (07) 891 1377

### Introduction

In 1990 the Australian International Development Assistance Bureau (AIDAB) commissioned a major project which entailed the construction of a complete forest inventory of the nation of the Solomon Islands (SI). A consortium of ACIL Australia (Management Consultants), IFERM (Forestry / Environmental consultants) and ERSIS Australia (GIS Consultants) were awarded the work. The project is a \$2.5 million job of over two years duration.

This paper is a brief summary of working paper number six which documents the design and application of the Forest Resources Information System or FRIS. Many important components of the report, such as the determination of user requirements, have not been included in this summary. The full 100 page report is available should the reader be interested in further detail.

### Background

The forest resource makes a critical contribution to the stability of SI landscapes and ecosystems. The concept behind the establishment of FRIS is that an inventory of

forest resources is needed to ensure that the utilisation of the forest resources is sustainable.

Utilisation of the forest resource occurs at various levels: the most obvious, and those which contribute substantially to export income, are commercial logging and sawmilling. However, cash cropping and subsistence farming are also significant consumers of the forest resource with possibly 70,000 ha being cleared in the next 20 years for agricultural purposes. This represents some 20% of the resource. Foraging in the forest resource for food and other essentials is also an important form of forest utilisation. Forests also provide clear water for villagers.

### Basic Design Considerations

FRIS is designed to ensure that data is accessed at a level consistent with its reliability. This is achieved by restricting the scales at which users can "view" data to scales consistent with the accuracy of the data. For instance, land cover information will be accessible at a scale of 1:50,000. At this scale climate data will be inaccessible except as printed tabular output qualifying the regional nature of the data. The system will not allow the user to view or access data at a scale of less than 1:50,000.

Another fundamental premise of design is the fact that log volume statistics can never be viewed in isolation of environmental/ecological

factors relating to the proposed region of logging.

FRIS data is divided into primary and supporting data. The primary data group contains the key resource information from the forest inventory, terrain classification, land systems and land tenure. This data is accessed using the design concept of Resource Map Units developed in PNG and currently used in Vanuatu. The supporting data will contain information that is not directly related to natural resource boundaries, or is more general in its spatial relevance than the specific Forest Resource Units (FRU) which comprise the primary group. Data on census, climate, logging licences, etc will be held as supporting data. This hybrid approach of adopting a "FRU layer" which can be queried in conjunction with other data layers is seen as the most elegant method of fully utilising the power of available GIS technology.

Table 1 lists the primary and supporting data groups.

## Technical Details

The MAPINFO Geographic Information System is used for graphical display and analysis, and the FOXPRO relational database manager is used for the input, storage and manipulation of the attribute data. FRIS integrates these two packages, effectively isolating the users from the intricacies of the packages, yet providing them with the power and flexibility of both.

FOXPRO is a DBASE compatible relational database manager produced by FOX software of the United States. It provides an ideal tool for developing the attribute management part of FRIS because it is totally compatible with the DBASE format data files used by MAPINFO. FOXPRO also provides a wide range of presentation facilities such as pull-down menus and windows, a powerful report generator and an extremely diverse programming language.

TABLE 1  
PRIMARY AND SUPPORTING DATA GROUPS

FRIS Core Data Set	Comments
Base Mapping	From Compilation Sheets
Land Systems	LS boundaries and attributes
AOA (Ag Opport Areas)	AOA boundaries and attributes
FRU (Forest Units)	FRU boundaries and attributes
Forest Survey	Plot positions, tree attributes
Slope Data	Manually from 1:50,000 Topo maps
EEFS Samples	Environmental survey samples
Watersheds	Watershed boundaries and attribs
Logging Licences	From FD Alienated Land entered from SCD coordinate list
Census Data	Attributes and village positions
Flora and Fauna	Attributes and position
Climate	Rainfall and cyclone path



The programmer is able to utilise these facilities to produce the user interface and processing facilities outlined above.

MAPINFO provides the graphical interface to the FRIS. MAPINFO works directly on the databases maintained through FOXPRO. Using MAPINFO, the user is able to select regions over which a FOXPRO textual report will be printed, produce thematic (coloured or symbolised) mapping to represent the value of a variable (such as slope), observe spatial trends and relationships (does one forest type consistently occur in a given slope category?) and check data produced through field observation (FFS) against data obtained from API.

The User Interface provides the 'look and feel' of the software to the user. The screen menus, layout, input screens and almost every characteristic of the system as seen by the user is covered by the design of the user interface.

From the users' perspective, particularly where the users are relatively new to computing, good design of the user interface is critical to effective operation of the software in the long and short term.

It is safe to say that if the software is difficult, slow and/or cumbersome to use, then interest in using the system and hence productivity will be low, or in extreme cases, non-existent. To this end, a great deal of effort was put in to the design of a consistent, simple and

intuitive interface for the FRIS.

Since FRIS is composed of both the MAPINFO graphical interface and the FOXPRO textual interface, the user interface can never be totally consistent. Fortunately both systems use mouse driven menus (that is point and shoot to select an option) and both support 'hot key' (hit the first letter to select the option) menus, so there is some degree of similarity. In the FRIS both systems display their help messages on the bottom line of the screen and both can be operated with either a mouse or keyboard. Despite some cosmetic differences between the two environments the user will be able to swap from one to another with minimal confusion.

The FRIS database user interface was designed to incorporate simplicity and clarity with minimal screen clutter. A pull down menu system was incorporated to allow easy mouse or keyboard selection of system functions, including input screens and reports. Colours were used sparingly to allow the system to be used successfully on laptop computers.

A primary goal of the design was to minimise the number of menu choices presented, instead, the system anticipates required actions, making the system more intuitive to use. A typical, and standardised, example within FRIS is that the user never has to check for existence of an item of data before adding - the system will automatically check the identifier for the

data and, if it exists, allow the user to edit the existing data. Whilst this is by no means an unusual feature of database systems, it is indicative of the assumptions made for the user throughout.

Look up tables, range and format checking are used extensively to help prevent entry of erroneous data. Exit keys such as the Escape key have been disabled to prevent half entries, and explicit user verification is required for drastic action such as data deletion. Help messages on the bottom line of the screen prompt the user for the next required input or selection.

#### **ANNUAL SEMINAR "GIS IN PROGRESS"**

This year's FNQGIS Group Annual Seminar will be held in Cairns at the Radisson Plaza Hotel on 14 June. Invited speakers will present papers on the practical uses of GIS in their organisations, and the progress that has been made in utilising this technology.

Seminar registration is \$50 per person, which includes lunch and coffee breaks. A Seminar Dinner will be held in the evening at the Radisson Plaza Hotel. The dinner is \$40 per person, and partners are encouraged to attend this function. Copies of the Seminar Papers will be provided for \$10 each.

A Trade Display will provide those attending the Seminar with an opportunity to discuss their GIS needs with trade representatives.

A registration form and preliminary program for this year's FNQGIS Group Annual Seminar is attached to this Newsletter.

Participants are requested to complete the registration form and return it with payment to :-

The Secretary  
FNQGIS Group Inc  
P O Box 1786  
CAIRNS QLD 4870

#### **NEWSLETTER SPONSORSHIP**

This edition of the FNQGIS Group Newsletter has kindly been sponsored by ESRI Australia Pty Ltd, suppliers of the Arc/Info GIS and ERDAS image processing software packages. ESRI's support is gratefully acknowledged.



**FAR NORTH QUEENSLAND G.I.S. GROUP INC**

P O Box 1786 CAIRNS QLD 4870 Tel : (070) 52 3222 Fax : (070) 31 2984

**"G.I.S. IN PROGRESS"**

**FNQGIS Group Inc Annual Seminar  
Radisson Plaza Hotel, Cairns, Friday 14 June 1991**

**PRELIMINARY PROGRAM**

8:30 am Registration  
9:00 am Opening - Ian Anders, Regional Director, Department of Lands  
9:15 am Jim Monaghan, JCU : GIS and Coastal Landuse Planning  
9:45 am Earl Saxon, WTMA : World Heritage Boundary Mapping with GIS  
10:15 am Morning Tea  
10:45 am Pauline Catt, JCU : GIS in the Pacific Region  
11:15 am Martin Holmes, Lands : Sunmap GIS Products and Services  
11:45 am Trade Sponsors : Product Descriptions  
12:00 pm LUNCH  
1:00 pm FNQGIS Group Inc Annual General Meeting  
2:00 pm Len Lowry, Lands : The Digital Cadastral Data Base  
2:30 pm Steve McKenzie, Lands : GIS and Sugar Industry Productivity  
3:00 pm Afternoon Tea  
3:30 pm Barney Myers, Lands : The Mackay Region GIS Group  
3:45 pm Trade Sponsors : Product Descriptions  
4:00 pm Andrew Hooper, Bundaberg Sugar Co : Video on GIS  
4:30 pm Charles O'Neill, CIA : Closing Address  
  
7:30 pm Refreshments  
8:00 pm Seminar Dinner

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**PLEASE COMPLETE THE REGISTRATION FORM OVERLEAF, AND RETURN TO:**

The Secretary  
FNQGIS Group Inc  
P O Box 1786  
CAIRNS QLD 4870

# FAR NORTH QUEENSLAND G.I.S. GROUP INC

P O Box 1786 CAIRNS QLD 4870 Tel : (070) 52 3222 Fax : (070) 31 2984

The FNQGIS Group Inc is a local professional association that encourages the use of Geographic Information Systems (GIS) in Far North Queensland, and provides a forum for discussion and information exchange on matters relating to GIS.

## 1991 ANNUAL SEMINAR

**Radisson Plaza Hotel, Cairns**

**Friday 14 June 1991.**

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### REGISTRATION FORM

NAME: .....  
ORGANISATION: .....  
ADDRESS: .....  
.....POSTCODE.....  
WORK PHONE NO.: .....  
FAX NUMBER: .....

Please indicate the numbers required :-

... x Seminar Registration @ \$50.00 per person	... \$
... x Seminar Dinner @ \$40.00 per person	... \$
... x Seminar Papers @ \$10 per copy	... \$
TOTAL	... \$

Please make cheques/postal orders payable to FNQGIS Group Inc and return the Registration Form with your payment to :-

The Secretary  
FNQGIS Group Inc  
P O Box 1786  
CAIRNS QLD 4870