

# 1. Operation Manual for GeoConcept

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## **GeoConcept**

In IIMS, the Geoconcept was introduced as a tool to manage and analyze Geographic information. The Geographic information to deal with IIMS includes digital maps, statistical data, urban planning data, utility data and so on. The following items were considered to introduce the GIS Software.

- 1) Applicable for data inputting, thematic mapping, production of evaluation map and output of maps.
- 2) To include the practical and user-friendly modules
- 3) High operability as a business support tool

As the DTGC and the DUA have introduced the GeoConcept, they have already prepared the digital maps by using it. These organizations are using these digital maps for various purposes.

### (1) DTGC

They apply the GIS to update and manage the digital maps, and undertake map management and provide map information services to the user.

### (2) DUA

They add urban planning data to the digital maps, and produce the thematic maps by using GIS.

## **The goal to prepare the manual**

If the study team consider the fact that the DTGC and the DUA use the GIS at the present, the GeoConcept software was selected. This software shall be upgraded from an operational level to a practical level. This manual is arranged to include the necessary items in producing the final products for IIMS and contains especially the operational flow that is not included in the software manual, and the functions that have not been applied yet. The following items are included.

- 1) General flow of basic operation
- 2) Definition and setup of coordinate system
- 3) Data acquisition and compilation
- 4) Application of raster data and data acquisition from raster data
- 5) Import and export of data
- 6) Import of existing data
- 7) Compilation of database and preparation
- 8) Correction of attribute data by using query function
- 9) Application of SQL/ODBC and link of them
- 10) Data analysis
- 11) Query and representing functions
- 12) Spread sheet analysis tabulation
- 13) Thematic mapping by virtual layer
- 14) Topological operation

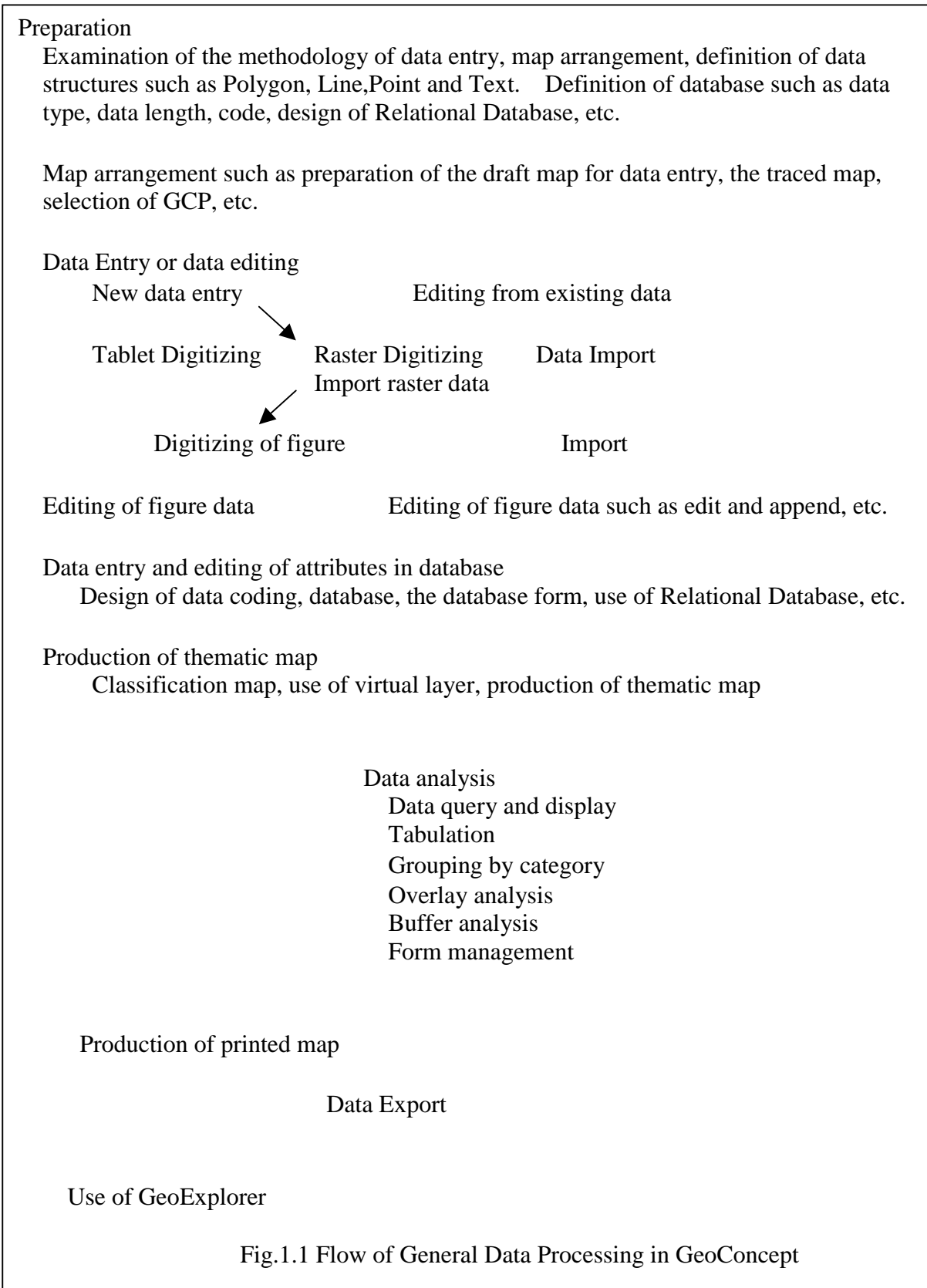
- 15) Grouping
- 16) Buffering analysis
- 17) Management for documents
- 18) Output of maps
- 19) Application of GeoExplorer
- 20) Some problems of Import and Export in GeoConcept
- 21) Data conversion in IIMS

## **1. General operation**

The general flow from the preparation of files to map output will be described below.  
(See Fig.1.)

- (1) Preparation
  - Examination of the methodology of data entry, map arrangement for data entry, preparation of the overlay maps, selection of GCP, etc.
  - Checking of georeference parameters in map.
  - Definition of data structures such as Polygon, Line, Point and Text.
  - Definition of database such as data type, data length, coding, design of Relational Database, etc.
- (2) Data entry
  - Definition of map projection.
  - Setup the UTM projection in Senegal.
  - Definition of map area.
  - Definition of type and subtype for data entry including fields in database.
- (3) Data Entry and Edit about figure data
  - Selection of the methodology for data entry as follows:
    - 1) Tablet digitizing
    - 2) Raster digitizing
    - 3) Importing and editing from existing data.
  - The topological data structure for map editing is always considered for data entry. Pay attention that the features must be digitized along the boundary of polygons and lines.
- (4) Attribute data entry and editing in database
  - Linkage of figure and database.
  - Arrangement and coding of attribute data in database
  - Use of relational database
  - Design of database form
- (5) Production of thematic map
  - Production of thematic map by data query and display.
  - Production of thematic map from the classification map by the use of virtual layer, etc.

- (6) Data analysis
  - Data analysis and tabulation by data query.
  - Overlay by the topological operation
  - Grouping of thematic maps by category.
  - Buffer analysis
  - Form management
- (7) Production of output
- (8) Data Export
- (9) Usage of GeoExplorer



## 2 Definition and Setup of Coordinate System

### 2.1 Map Projection in GeoConcept

For the 1:5,000 topographic map for the Dakar metropolitan area, the map projection of UTM was adopted. The reference ellipsoid is Clarke 1880 and the same map projection is adopted in IIMS as shown in Table2.1. The extended Lambert projection is adapted as default in the GeoConcept. Therefore, these correct elements should be defined in GeoConcept. If correct parameters are set up properly, it is easy to display geographic coordinates or convert the coordinates into another coordinate system.

Table2.1 Definition of Mapping System in IIMS	
Map projection:	UTM
Zone number:	28N
Reference ellipsoid:	Clarke 1880
Origin of coordinates:	West 15 degree North 0 degree
Scale factor:	0.9996

**Note: The ground controls of the 1:5,000 topographic map to be produced by DTCG uses the coordinate system adjusted in 1974. However, those of the 1:50,000 topographic map uses another coordinate system based on the origin of Adindan.**

The procedures to setup the definition of the reference parameters in GeoConcept are as follows:

- (1) Edit the Standatd.gcp file in the directory of GeoConcept by using Editor or Word processor.
- (2) Add the following definition record to the Standard.gcp file

```

;start Senegal UTM

; Senegal(UTM)
START SYSCOORD
TYPE : 1001           <= User defined Type number
Name : Senegal UTM   <= User defined Name of coordinate system
Projection : 1       <= Map projection ( 1 mean UTM)
Geodetic : 1        <= Reference ellipsoid, (1 mean Clarke 1880)
Lamda0 : -15.0      <= Latitude of the origin
Phi0 : 0.0          <= Longitude of the origin
X0 : 500000.0       <= X-coordinate of the origin
Y0 : 0.0            <= Y-coordinate of the origin
K0 : 0.9996         <= Scale factor of the origin
END SYSCOORD
    
```

- (3) Save the Standard.gcp file.

## 2.2 Representation of Coordinates and Conversion of Map Projection

The GeoConcept is able to convert or shift the original coordinates to the coordinates in another coordinate system automatically by using parameters in the defined coordinate system.

- (1) Representation of coordinates and conversion of projection  
Select “WINDOWS(W)->COORDINATE(N) Ctrl+Y“ in Command bar. (See Fig.2.1.)
- (2) Change of unit to represent the coordinates.  
Select an appropriate item in the represented menu. (See Fig2.2.)
- (3) Change of the map projection.  
Select an appropriate map projection in the map projection. (See Fig2.3.)
- (4) Or, Select “Change -> Change Map projection” in the Edit Menu. (See Fig.2.4.)

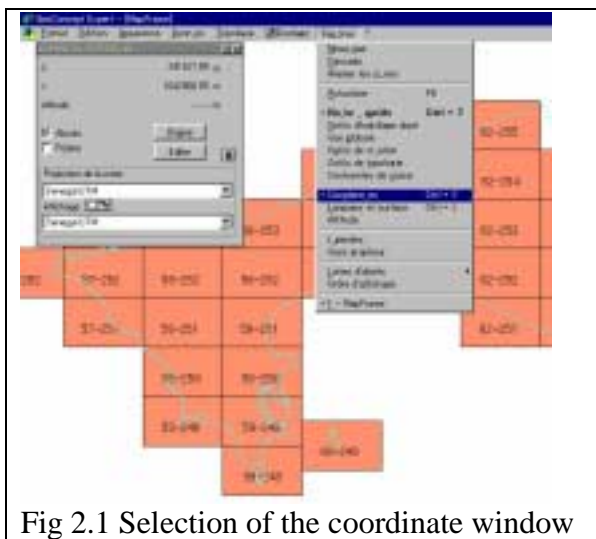


Fig 2.1 Selection of the coordinate window

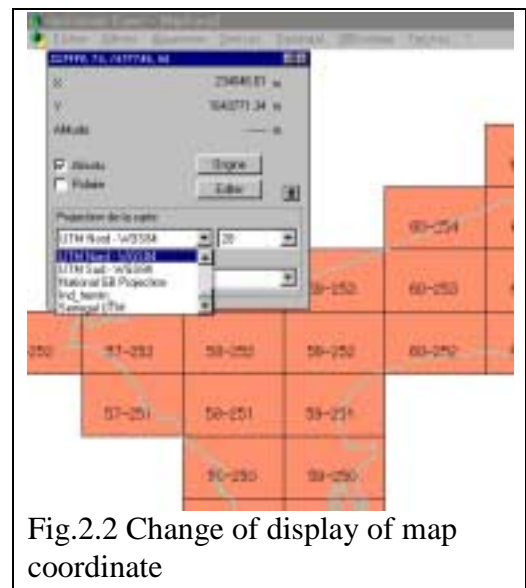


Fig.2.2 Change of display of map coordinate

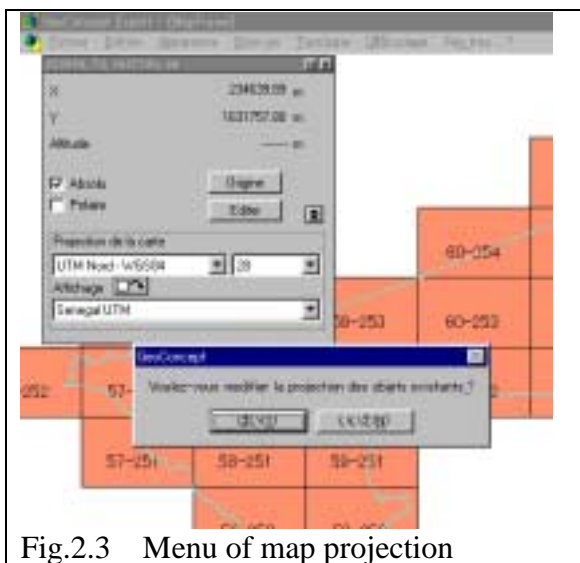


Fig.2.3 Menu of map projection

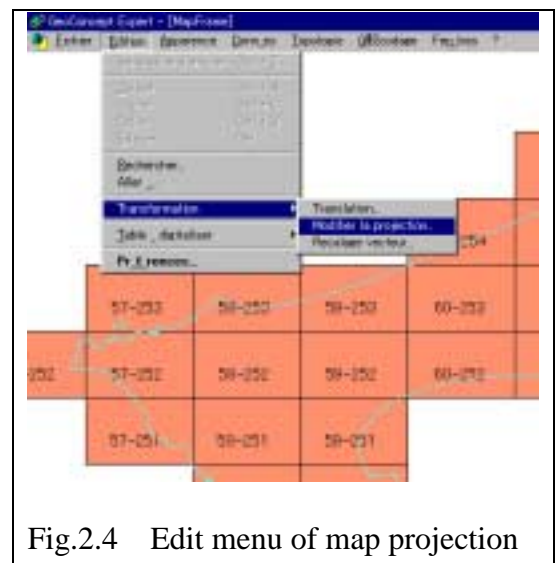


Fig.2.4 Edit menu of map projection

### 3. Data Acquisition and Compilation

The procedures of data acquisition proceed in the following steps:

- Preparation of map for data entry (data item, figure data and definition of attribute data.
- Data entry of figure data
- Data entry of attributes
- Editing of figure data with topological checking and editing of attributes.
- Checking of data structure

There are two digitizing methods for data acquisition of figure data compilation in GeoConcept as follows:

- Digitizing using tablet digitizer
- Digitizing of raster data on display

For the detailed digitizing method, refer to the manual of GeoConcept.

### 4. Application of raster data and data acquisition

GeoConcept provides the function of importing raster data such as Bitmap, SPOT Viewfile, GIF, TIFF, Defense Spatio map, and GeoConcept raster. Raster data is useful to display the background data and to edit the vector data in GeoConcept. The user can process the scanning data to the georeference data. It is necessary to prepare the correspondence data on at least four points between scanning coordinates and map coordinates as shown in Fig. 4.1.

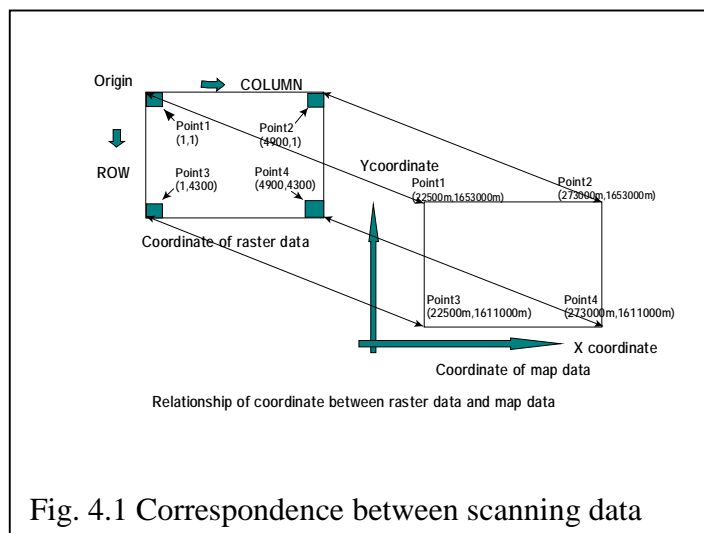


Fig. 4.1 Correspondence between scanning data



The procedures to import raster data is as follows:

(1) Select import command

This is the process to import raster data into GeoConcept. The user selects the raster data file. File type is as follows: Bitmap, SPOT Viewfile, GIF, TIF, Defence Spatio map or GeoConcept raster.

- Select “File -> raster -> import”. (See Fig. 4.2.)
- Select raster data about file name and file type in the window. (See Fig. 4.3.).



Fig. 4.2 Selection of raster import



Fig. 4.3 Selection of raster data

(2) Raster data entry

This is the process to register the GCP for matching raster data.

- Select the icon of data registration to identify GCP on windows. (See Fig. 4.4.)
- Data entry of GCP data
  1. Click the left button for the first point on window. (See Fig. 4.4.)  
Raster coordinates will be registered by this click automatically.
  2. Enter the map coordinates against raster coordinates.

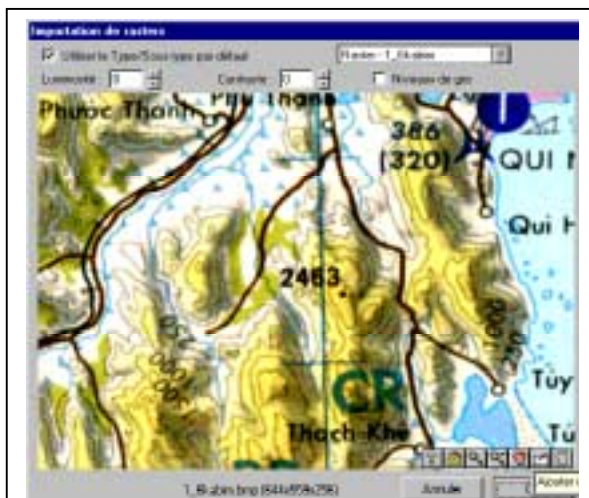


Fig. 4.4 Graphic window of scanning data



Fig. 4.5 Registration of GCP

- Continue to the registration of GCP and complete at least four points. (See Fig. 4.6.)

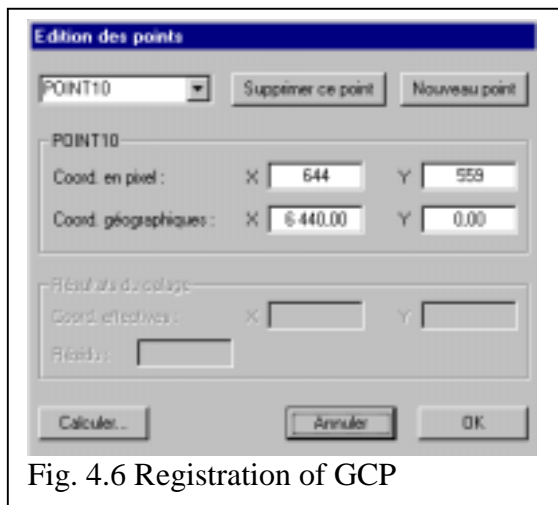


Fig. 4.6 Registration of GCP

- Implement to calculate  
 This is the process to check the registration point by calculation of the residuals in the table.  
 If the residual error of calculation is acceptable, click OK icon.  
 There are two options to process scanning data to attach the scanning data to GeoConcept or to rectify the scanning data.  
 OK to End

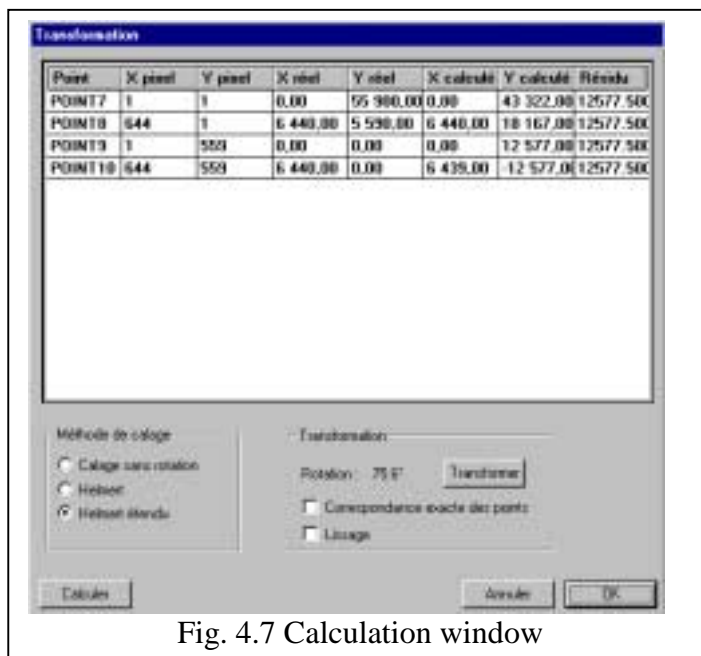


Fig. 4.7 Calculation window

## 5. Import and Export

### 5.1 Import

The dataset prepared by another GIS software is available to the GeoConcept. Import is enabled in the following formats:

- (1) GeoConcept files
- (2) DXF file
- (3) MIF file
- (4) Arc/INFO E00 file
- (5) Database file (Text,dBASE, Excel)

#### (1) GeoConcept file

The GeoConcept can deal with data files of Text, dBASE and Excel and model file. The model file includes the structures of data and the information of layer. There are two cases to import data.

- 1) In the case of using the data file directly  
Import the data file in the GeoConcept after setting up the file structure. The file structure of features to import should be defined in advance.
- 2) In the case of using the model file  
By using the model file, the existing data structure is updated and the data file is imported.

#### (2) DXF file

The DXF file is imported when the version of the AutoCAD is release 12. The CAD is available to exchange data in the CAD or GIS. The steps to import are as follows:

- 1) Define the data structure to import, which is the names of layers, sub-layers and fields.
- 2) Implement to import  
Select "File -> Import",  
Select the ASCII DXF and then input the file name.
- 3) In the case of importing directly  
Select the "automatic generation", and then implement to set a suitable option.
- 4) In the case of using "Custom Import"  
Select "Data -> Set up".  
Define the class, sub-class, data structure (polygon, line, point or text) and layer.  
Link the connection between the layer of DXF and items to import.  
Implement to import again.

(3) MIF file

The MIF is a text file used as an exchange format in MapInfo, which consists of figure data(.MIF) and attribute data(.MID). If MIF file created by CartaLinx or IDRISI32 is used, it is necessary to eliminate bugs. The process to eliminate bugs is shown as follows:

- 1) File -> Import  
Select a kind of file (MIF/MID) and the file name.
- 2) Select “Automatic Import” or “Custom Import”.
- 3) On “Automatic Import”  
Implement to import
- 4) On “Custom Import”  
Link the connection between class/class of MIF and class/sub-class and field of GeoConcept.  
Implement to import

(4) Arc/INFO E00 file

At first, the data structure (layer name and field) should be confirmed from metadata and documents. The class and sub-class should be defined in the data setting menu of GeoConcept.

- 1) Implement to import, and then memorize the layer structure.
- 2) Cancel to import
- 3) Define the type and subtype of polygon, line, point and text including database fields.
- 4) Implement to import E00 file again.  
Make a linkage between layers and fields of E00 file and GeoConcept manually.

(5) Database file

The dBase file and Text ASCII file are able to import in the internal database of GeoConcept.

The following is the example of Text ASCII file:

- 1) Select “File -> Import update”.
- 2) Select the file to import.  
File type is dBASE or ASCII delimited TEXT.
- 3) Prepare the Setup file.
- 4) Implement the wizard of data integration after selecting separator and field names of database in the headline. Be careful of the selection of option. (Refer to the manual)  
Check the preview of the file.  
Select the option of separator.  
Select the option that uses the first record as the field name.  
Select the option. The default option is avoided.

- 5) Implement to import by the link of fields among the databases  
Define the relation to class and sub-class, and then implement to import.  
Indicate an essential field.  
Set up the linkage between fields.  
Implement to Import

### 5.3 Export files

The GeoConcept can create the following export files:

- 1) Data file for GeoConcept supported by the format of Text file, dBase file, excel file and GeoConcept model file.
- 2) DXF file for AutoCAD based on release 12
- 3) MIF file for MapInfo
- 4) Shape file for Arc/Info and ArcView

- (1) Data file for GeoConcept  
Process as well as Import.

- (2) DXF file  
Process as well as import.
  - 1) Select the object of sub-class.
  - 2) Implement to export  
Select "File Export", ASCII DXF and file name.  
Check the option and implement.

- (3) MIF file for MapInfo  
Process as well as import
  - 1) Select the object of sub-class
  - 2) Select "File -> Export".  
Change file to MIF/MID, and input the file name.
  - 3) Select the class and sub-class, and then implement to export if not select the automatic to import.

Note: The coordinates of MIF file are converted to geographic coordinates (latitude and longitude) of WGS84 automatically.

- (4) Shape file for Arc/Info and ArcView  
This function sometimes does not work because it may cause bugs in the present version of software. See the operation manuals as detailed as possible.
  - 1) Select "File -> another Export -> shape" and input the file name.
  - 2) Select the object of class/sub-class.
  - 3) Select field, and then implement to export. The field name should be less than eight characters.

## 5.4 Another Export

### (1) Picture Export

This function is to save the screen image to a graphic file. The graphic format of BMP, GIF, JPG, PCX, TIFF or WMF are prepared.

### (2) Tiling

The user can set a suitable size, and then divide the screen file into tiles. The user can make files to put on address.

- 1) Set the size of tile (row and column). Select the format of file and directory to save, then click the “next”.
- 2) Select “generation” option, then click the “next”.
- 3) Select color, then implement to export.

Tiled file has georeference information and is available for Arc/Info, IDRISI32, and CartaLinx.

## 6. Import from existing data and its application

The digital data so called croquis is used in many organizations in Senegal. The coordinates are not coincided with the actual geographic coordinates. The procedures to coincide those with the correct coordinates will be explained below. The coordinate value of Y-axis is shift 1000km to south. The coordinates should be correct.

### (1) In case of GeoConcept file

- 1) Make an export file from the croquis file.  
The GC model file and ASCII GC data file are produced.
- 2) Edit the type number of SYSCOORD in ASCII GC file to change it to the defined number.

Fig. 6.1 Sample of correction

```
//$FIELDS Class=HABILLAGE; Subclass=Texte d'habillage; Kind=3.....  
//$SYSCOORD {Type: 901 } <= Type901 is Syscoord number of UTM projection  
in this project.  
  
//$UNIT Distance:m  
//$FORMAT 1
```

- 3) Make the new file to set the ellipsoid, map projection and unit in meter.
- 4) The GC model file is exported at first, then the ASCII GC text file should be exported.
- 5) Using the move command, the Y-coordinate should be moved 1000km to north.
- 6) In the information of file, recalculate the domain of coordinate and then define the domain.

- (2) In case of DXF file
  - 1) Make an export file from the croquis file.
  - 2) Make a new file in UTM coordinate system in Senegal.
  - 3) Import the created DXF file.
  - 4) Using the move command, the Y-coordinate should be moved 1000km to north.
  - 5) In the information of file, recalculate the domain of coordinate and then define the domain.
  
- (3) In case of MIF file
  - 1) Import MIF file to IDRISI32.
  - 2) Confirm or revise the coordinate system in MIF file, especially LongLat and Degree of Georeference parameter. The coordinate system should be the adopted geographic coordinate system
  - 3) Using the “projection”, convert the geographic coordinate system to the UTM coordinate system. The IDRISI32 adopts WGS-84 ellipsoid as reference ellipsoid in default. Moreover, the unit is meter.
  - 4) Make an export file.

**Note: In operating polygon features, one line should be added to the MIF file as “Pen (1,2,0) “ to prevent bugs by the editor.  
Every MIF file of line data must be edited by using the bug fixed program “MIFLINE” as mentioned before and imported to GeoConcept.**

- 5) The MIF file is exported again.
  - Make a new file in WGS-84 UTM coordinate system.
  - Import the created MIF file.
  - Using the move command, the Y-coordinate should be moved 1000km to north.
  - Transform the coordinate system from WGS-84 to the Clarke 1880.
  - In the information of file, recalculate the domain of coordinate and then define the domain.

## **7. Compilation of attributes using compile and query functions for database**

The procedure to compile attributes of the database will be described below.

- (1) Encode the class/sub-class of the database  
The objects to be queried in the database are encoded as follows:
  - Click “données -> configuration”. Check and define the class/ sub-class with field for coding if necessary.
  - Add the new file to encode.
  - Use the data query by keying the command of “CTR-F” or select “Données -> Chercher”. Select the object of the class / sub-class for coding.

- Click “Données -> Remplir un champ Field”.
- Click the tab of Remplir champ in the menu of the window
- Select a field in the window and enter a value
- Click Execute.

(2) Move between layers

Moving between layers in the class/sub-class in the database is implemented by using the data query function.

- Click “the données Configurateur” and conform the class / subclass and the field to be moved.
- Create the class / sub-class if necessary.
- Define the field of the class / sub-class to be moved.
- Use data query to select the object by keying the command of “CTR-F” or select “Donnees -> Chercher”. Select the object of the class / sub-class for coding.
- Click “Donnees -> Remplir un champ Filed”.
- Click the tab of “Modifier Type/Sous-type” in the window.
- Select “Nouveau Type” and “Noveau Sous-type” by the mouse.  
Click the icon of “Transfer des champs” and identify to link the fields of “Ancients champs” and “Nouveaus champs”.
- Click the icon of “Modifier le Type/Sous-type”.
- Click the icon of “Ferme”.

## **8. Application and Connection of SQL/ODBC**

The relational database in GeoConcept can connect the external database using IDAPI through the ODBC driver. Microsoft Access97 makes it easy to connect to access from GeoConcept. The procedure for connection between those will be described as follows:

- 1) Select the command of “File Administrateur SQL/ODBC”.
- 2) Click the icon of “Nouveau” and select the connection of IDAPI in the menu. (See Fig. 8.1.)
- 3) Select a file in the SQL/ODBC configuration window, enter the name of configuration SQL/ODBC, and click the icon of “creer”. (See Fig. 8.2.)
- 4) Select MSACCESS in the window of “Gestionnaire utiliseé “. Click the icon of “Base de données“ and select the access file and click the icon of “Suvant“. (See Fig. 8.3.)



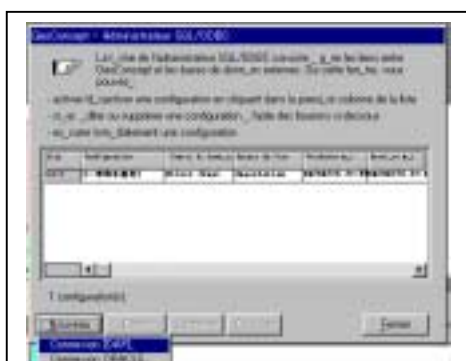


Fig.8.1 Selection of menu and IDAPI<sup>1</sup>

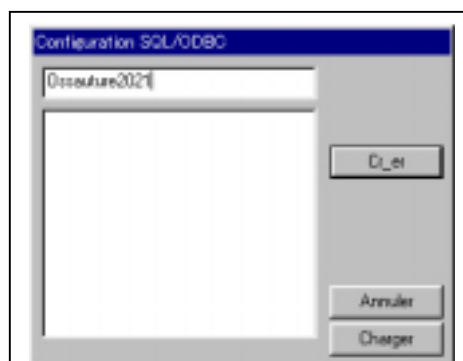


Fig.8.2 Entry connection name



Fig.8.3 Selected Database file of MSAccess97

- 5) The next window is displayed as “the Lien SQL/ODBC –Configuration-<Configuration temporaire>“. Select the option of the default or the other and continue to the next. (See Fig. 8.4.)
- 6) Select the one table to link, and click the icon of “Configurer la table“. (See Fig.8.5.).
- 7) Click the Existence and select the class and sub-class to link the table. Indicate the key field and make a field to link between MSAccess and GeoConcept. (See Fig. 8.6.) Click the icon of OK.
- 8) Click the icon of terminate in the previous window of step 4.
- 9) Click OK after the new window appears to report updating. (See Fig.8.7.)

<sup>1</sup> Sample figures with texts in non-French language are included for illustrative purposes only. The DTGC and DUA systems display all texts in French.

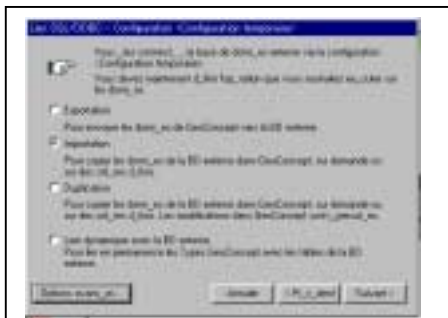


Fig.8.4 Selection of the option for connection

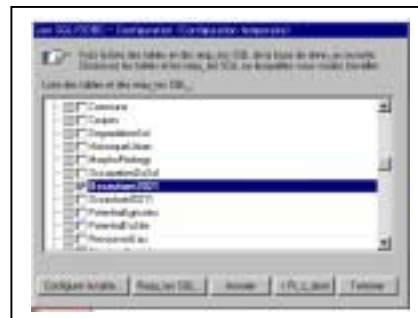


Fig.8.5 Selection of item in database



Fig.8.6 Set up the linkage of database fields through key field

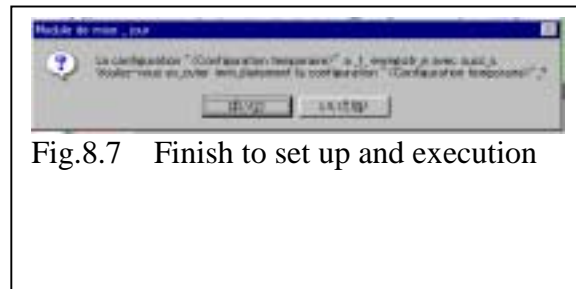


Fig.8.7 Finish to set up and execution

## 9. Data Analysis

### 9.1 Query and Display

The queried objects are added by using a spread sheet.

The user can extract necessary spatial information by the data query of items in the class /sub-class or topological data query in GeoConcept. The user can display the result on the display and make some documents on tabulation data in a selection list on the window. There are three query modules of Recherche, Chercher and the Topologie chercher. For more details, refer to the manual of GeoConcept. The general flowchart of data query is shown in Fig. 9.1.

Examination of selection of data query commands from Rechercher, Chercher and the topologie chercher.

Query of the string

Setup of the query condition

Define the condition

Use of the existing condition

Selection of layer

Creation of Statement in SQL

Selection of the file

Input strings for

query Definition of selection layer and field

Setup for the property on Display

Execution of query

Selection topological query

Set up the condition

Definition and editing of the statement for SQL

Selection of an option such as legend creation, etc.

Selection of 'save the condition'

Execution of data query

Display of the queried object and tabulation, and data utilization

- Highlight of the object,
- Confirmation of the location on display,
- Display in Global view
- Tabulation of results, data analysis and production of thematic map

Fig.9.1 Flowchart of query and display

## 9.2 Tabulation

The memory data of a selected object in data query will be transferred to the selection list window in GeoConcept. (See Fig. 9.2.1.) The user can use these data for tabulation of the field data. In addition, a presentation material will be made for the spatial data analysis.

The selection window is one of the unique modules in GeoConcept and plays a role to manage the same function as the clipboard in Windows NT. At the same time as the query is implemented, the contents will be displayed on the selection list window.(See Fig.9.2.2.) Refer to the manual for more details.

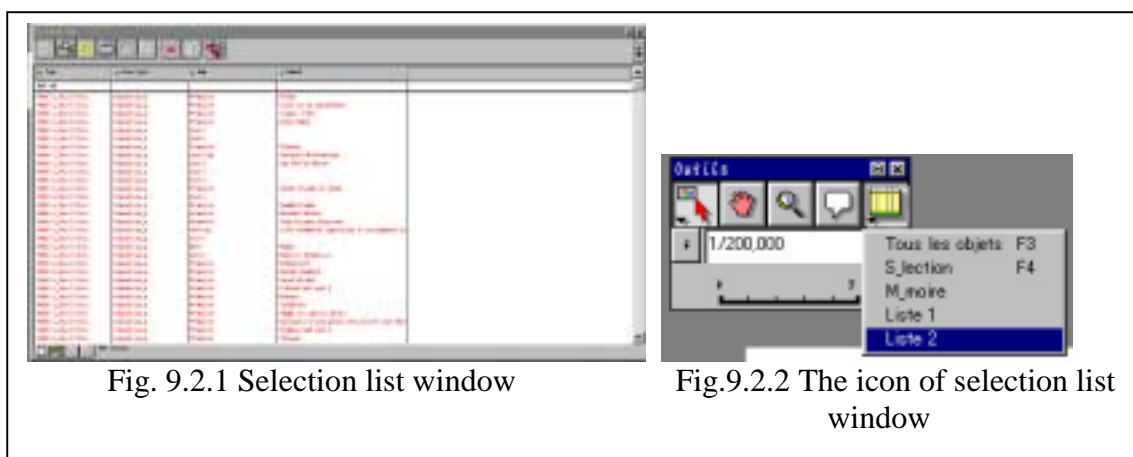


Fig. 9.2.1 Selection list window

Fig.9.2.2 The icon of selection list window

For example, tabulation of data is set as follows:

- Set up the configuration of display environment to the selection list in the menu of the field setup. (See Fig. 9.2.3.)
- Click the icon of “the army knife” in the selection window.
- The user sets up the field to display in the selection list by clicking the tab of “the apparence”.
- Click the tab of “Rupture finale”.
- Set up the sum of data in the selection list. (See Fig. 9.2.4.)
- Click the tab of “Rupture finale”.
- Click the “Afficher la rupture finale in Affichage”.
- Select the display position of the record at the top “En haut” or the last “EN bas” in the menu of “Affichage”.
- Select the timing to calculate the tabular data by clicking the option of “Calculer a chanque in Calcul”.
- Select the display style of “Gras” or “Italique” in “Apparance”.
- Click OK.

Calculation in the selection list

- Pull down the field to sum and select the calculation item.
- Result will be displayed in the window.(See Fig.9.2.5.)



Fig.9.2.3 Set up the configuration

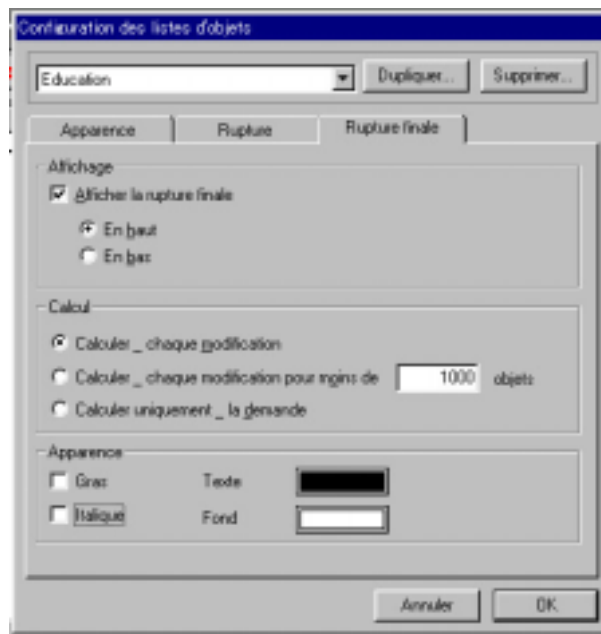


Fig.9.2.4 Set up the sum of data

面積	名前	Names2
401.00	401.00	
Public_Facilities Education.p 3,019 m <sup>2</sup>	Primaire Kleber	
Public_Facilities Education.p 7,694 m <sup>2</sup>	Primaire Ecole de la Cathedrale	
Public_Facilities Education.p 7,192 m <sup>2</sup>	Primaire Jeanne d'Arc	
Public_Facilities Education.p 7,998 m <sup>2</sup>	Primaire Notre-Dame	
Public_Facilities Education.p 9,214 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 717 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 4,561.5 m <sup>2</sup>	Primaire Plateau	
Public_Facilities Education.p 4,891 m <sup>2</sup>	Institut Senegal-Britannique	
Public_Facilities Education.p 50,356 m <sup>2</sup>	Lycee Van Vollen Hoven	
Public_Facilities Education.p 2,735.5 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 2,670 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 28,015 m <sup>2</sup>	Primaire Saint-Joseph de Clury	
Public_Facilities Education.p 6,746.5 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 6,878.5 m <sup>2</sup>	Primaire Soumbédioune	
Public_Facilities Education.p 410 m <sup>2</sup>	primaire Macodou Ndiaye	
Public_Facilities Education.p 318.5 m <sup>2</sup>	Primaire Jean-Jacques Rousseau	
Public_Facilities Education.p 73,639 m <sup>2</sup>	College Ecole normale superieure d'ens	
Public_Facilities Education.p 6,888 m <sup>2</sup>	Ecole	
Public_Facilities Education.p 891,459 m <sup>2</sup>	Univ Dakar	
Public_Facilities Education.p 160,005 m <sup>2</sup>	Lycee Maurice Delafosse	
Public_Facilities Education.p 6,847.5 m <sup>2</sup>	Primaire Gibraltar	
Public_Facilities Education.p 811.5 m <sup>2</sup>	Primaire Barthe Maubert	

Fig.9.2.5 Result of tabulation in the window

### 10. Preparation of Thematic Map Using Virtual Layer

GeoConcept can make the virtual layer to create the several virtual layers to add circle charts, bar charts, labels and symbols related to a thematic maps.

These modules make it easy to get the statistic graph, label and symbol classified layer on the thematic map. (See Fig. 10.1.)

The fundamental operation of all modules is the same. For more details, refer to the manual. The general operation to use the virtual layer of thematic maps is as follows :

- Select the thematic map for display. (See Fig. 10.1.)
- Click the icon to add a layer, and select the type of the virtual layer to be created.
- Select the class and sub-class as the object.
- Input the name of the virtual layer.
- Click OK at the end of setup.

The procedures to get the bar chart in the virtual layer are as follows :

- Select thematic maps for display. (See Fig. 10.2.)
- Click the check mark at the top of the target field in the field selection. (See Fig. 10.3.)
- Set up a type and color.
- Set up the width and thickness to display properly.

In the case of coincidence between the field value and the presetted size of bar, the following operation is necessary. (See Fig. 10.4.)

- Click the icon of ?. This sets up the range of the minimum and maximum values.
- Enter the size of bar to manage the graph.

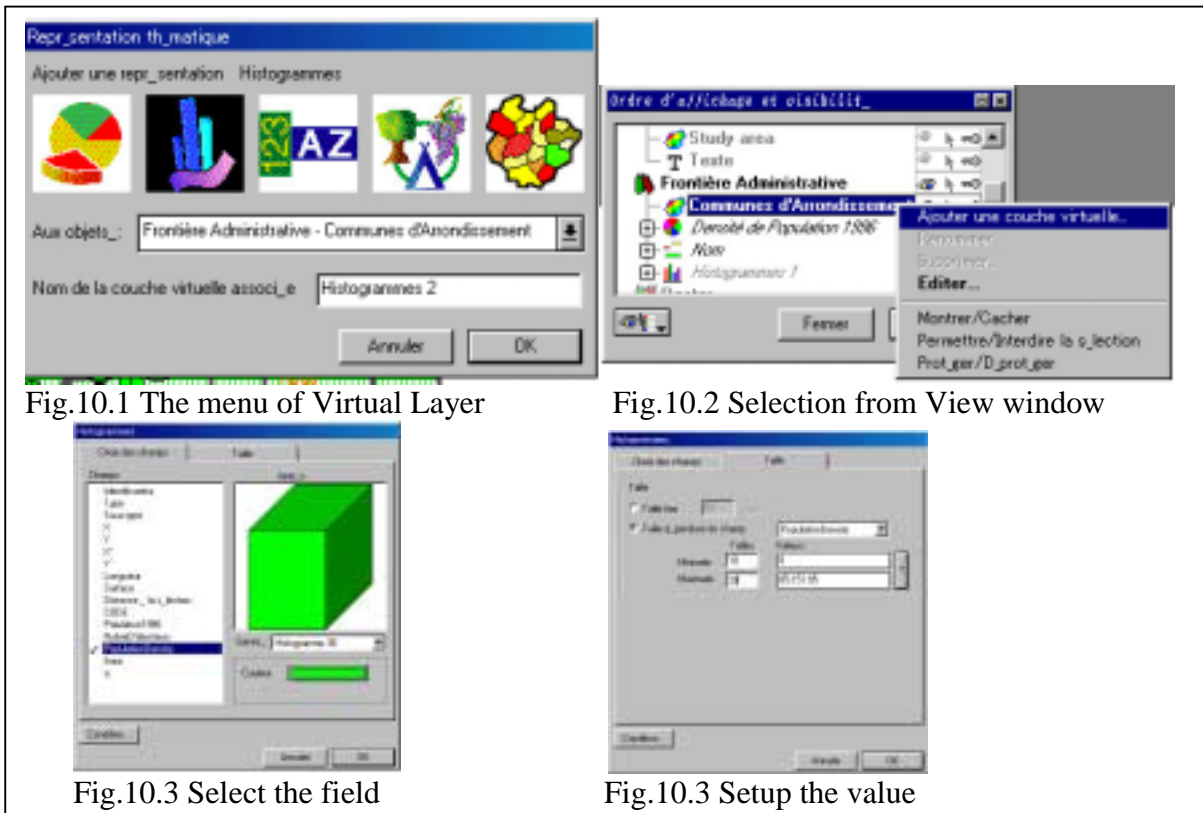


Fig.10.1 The menu of Virtual Layer

Fig.10.2 Selection from View window

Fig.10.3 Select the field

Fig.10.3 Setup the value

## 11. Topological analysis

The topological analysis is the same as polygon overlay. This function is used to make the new object that is common or a total area between two or more polygons. The following is the general operation (see Fig. 11.1):

### Definition and selection of topology operation

- Set up the result layer
- Define the attribute item for extraction such as data structure, data field and its attribute.
- Select the option of overlay from intersection, left polygon, right polygon.

### Implementation of the operation

- Select the first object (possible to use the data query).
- Select the second object (possible to use the data query).

Select the option (Intersection, left polygon, right polygon).

Select the output layer of the class and sub-class.

Select the option.

Definition of the linkage of attribute field between input and output.

### Implementation

The result is used for:

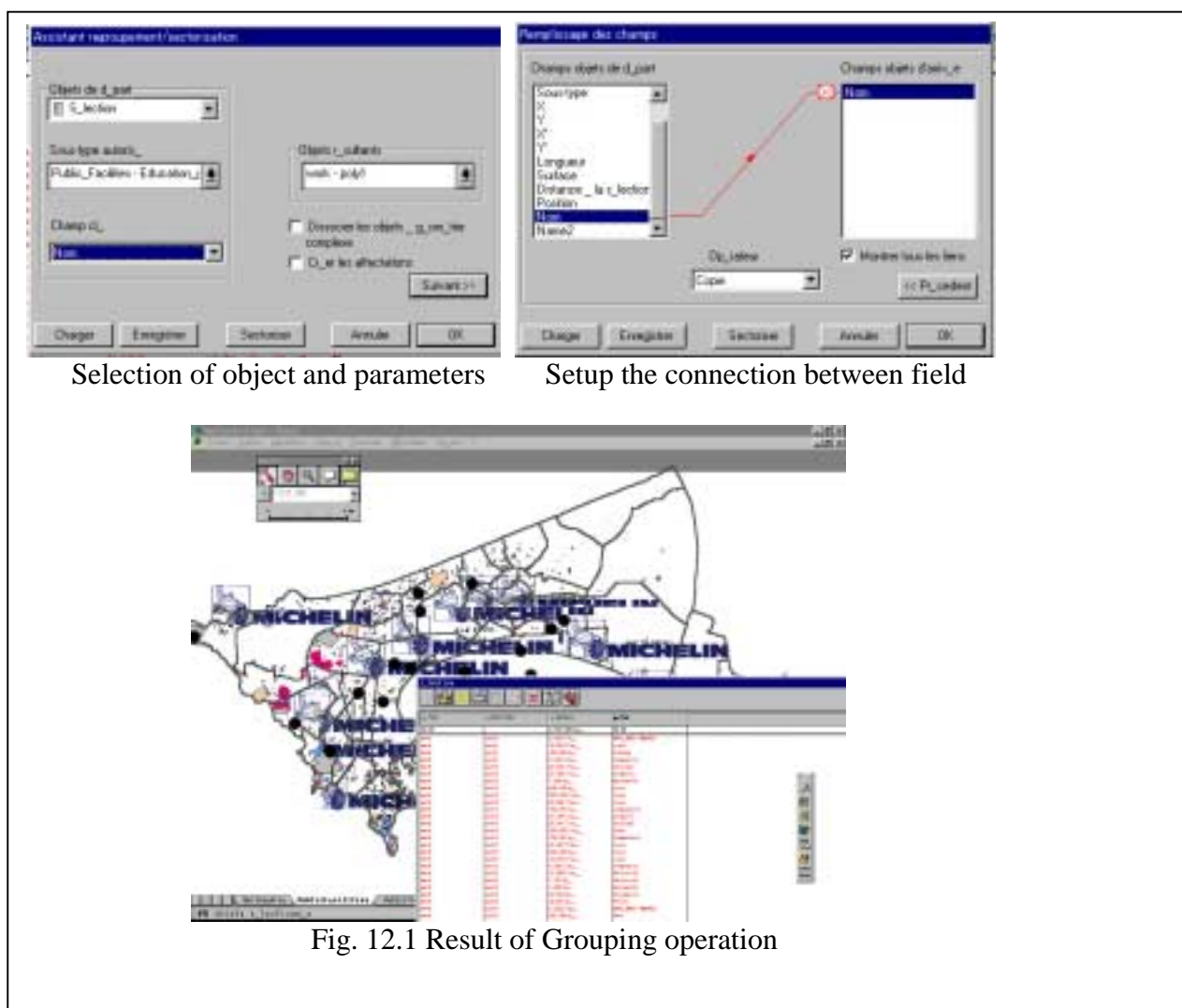
- Display of thematic map
- Tabulation
- Map print

Fig.11.1 Flowchart of topological operation

## 12. Grouping

The grouping is used to unify two or more objects and make a new object. The equal value is unified to each other according to the indication of the essential field. Refer to the manual for more detailed operation. The next will be explained as the example of the procedures to make a grouping of education facilities according to the kinds and names in the public facilities.

- Select the object by the data query of education facilities in public facilities.
- Select “Topology -> Grouping” in the menu bar.
- Set the selected object of education facilities in the window including the class/sub-class.
- Set the key field.
- Set the result object to get the operation result.
- Click Next (“Survant”).
- Reconfirm and link the relation between fields one by one.
- Click OK at the end of setup. (See Fig. 12.1)





### 13. Buffering Analysis

The buffering analysis is used to evaluate the accessibility of the object in GIS according to the purpose of the spatial analysis and the flowchart of its application. The user sets up the layer and the extraction conditions such as the purpose for data analysis, the distance of the buffer, etc. The buffer area of figure will be used for data analysis. Data analysis uses the buffering result and the presentation material is produced by the topological operation and the selection list window in GeoConcept. Refer to the manual for more detail. The procedures to operate are shown in Fig.13.1.

Examination of buffer analysis as targeted

Definition of the buffer, and its area and option.

Definition of the resulting layer such as layer name and attribute field

Selection of object for buffer analysis by selection of a figure by mouse or by data query.

Execution of buffer command

Data input of buffer parameters of the distance and its option.

Selection of result layer

Execution of buffer analysis

Utilization of result

- Display of thematic map
- Tabulation
- Printout

Fig.13.1 Flowchart of buffer analysis

## 14. Document Management

The GeoConcept has modules to represent documents and to update them by the spreadsheet of the database. This function is useful to manage the facilities. The IIMS can manage any kinds of data using document forms. Document forms can be displayed on the window using the query function or the represent attribute function. The procedures to use document forms are shown as follows:

- Layout of the form
  1. Select a display field in the form.  
Select “Données -> Confluateur” and click the tab of “Fiche” to set up the fields to be able to use in the form.
  2. Design of the form  
Select the object and enter “CTR-I”.  
Design the layout of the form by clicking the icon for layout.

- Usage of the form  
The form will be displayed by the mouse operation as follows:

Double click the object.  
Key in the command of “CTR-I” or double click in the selection list window  
After selecting the object by the data query, select the form by the mouse or otherwise:

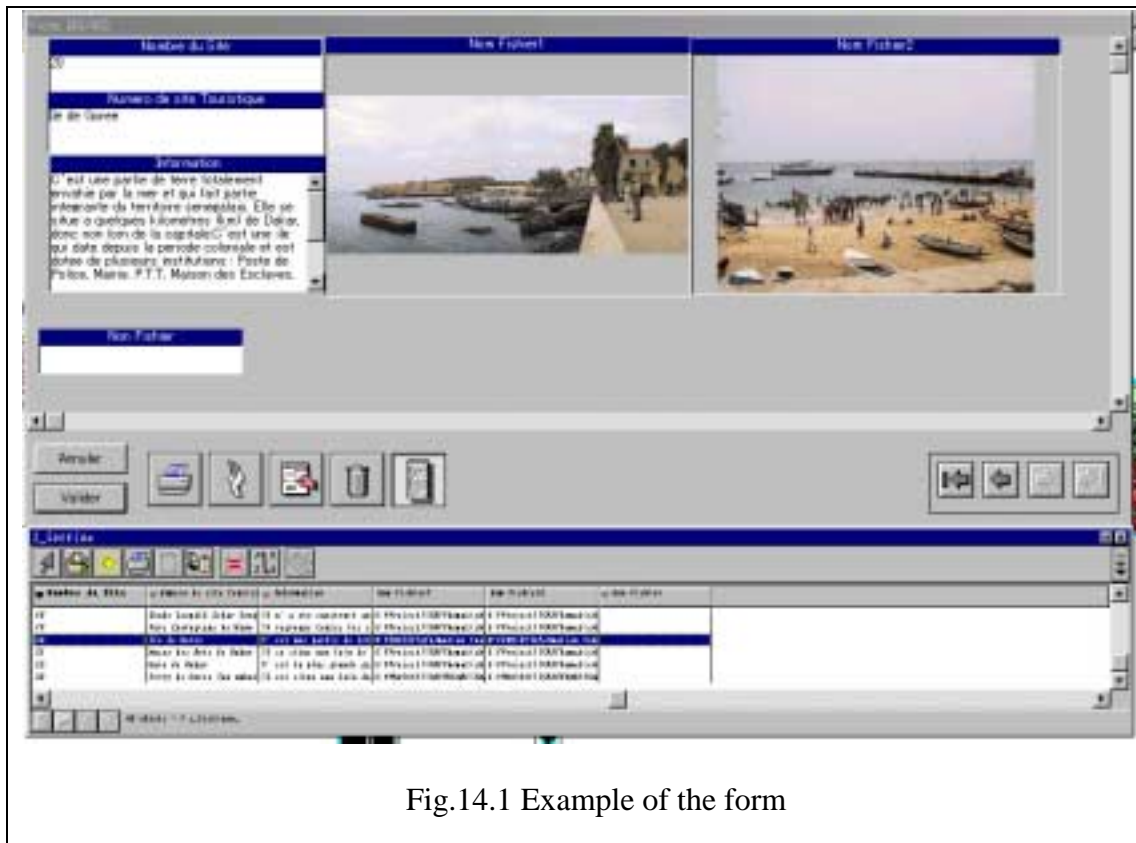


Fig.14.1 Example of the form

## 15. Map making

Using the module of map making, the thematic map and the evaluation map can be outputted.

The procedures of how to make the legends of map as a sample are shown in Fig.15.1.

- 1) Prepare for map making.  
Select a map scale and set it up.  
Define lines and color in query option or virtual layer  
Using the property to represent legend, compile the legend.
- 2) Design the layout  
Set the extent to cover a sheet, the legend, the direction, scale and comments.
- 3) Print maps  
Select the output device and printing paper.

### Preparation for map making

- Selection of map scale, printing area and paper size.
- Definition and Creation of the legend  
The legend is prepared by the option of the query, or the classification module in “Données-> Créer une classification“ , or the virtual layer.
- Define the properties of color in the query or the property of the virtual layer.
- Editing of Legend  
Select “Fenêtres->Legend or CTR-Y“. Edit the property in the legend.
- Consider the printing area and map scale, and the design of printing.
- The design of map layout
  - Layout the map making area, legend, the symbol of north, scale bar, annotation data, Logo, etc.
  - Save the layout
- Implement to print
  - Selection of output device and the size of paper

Fig.15.1 Flowchart of map making

## 16. Application for GeoXplorer

GeoXplorer is the object of GeoConcept for use in the application of MSWord, MExcel, MSAccess and Power Point in the Microsoft office software. GeoXplorer provides some convenient display modules to manage to display, to select the object and to refer to the data properties. Therefore, the user can use these good functions for their data management of GIS data and his presentation tool.

This object of GeoXplorer must be installed from the installing disk of GeoConcept by the system administrator. Here is the introduction of the example of GeoXplorer in MExcel. (See Fig. 16.1).

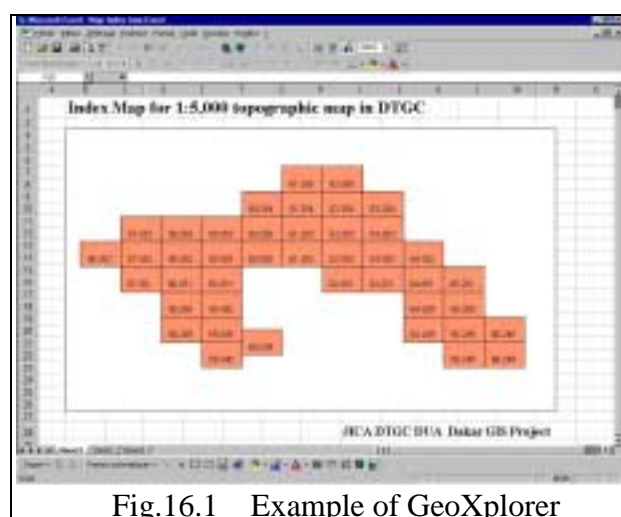


Fig.16.1 Example of GeoXplorer

- (1) Open the new file in Excel of Microsoft Office.
- (2) Insert the object of GeoXplore.
  - 1 Move the cursor to the point to insert.
  - 2 Insert the object of GeoXplorer and manage it. ( See Fig. 16.2. )

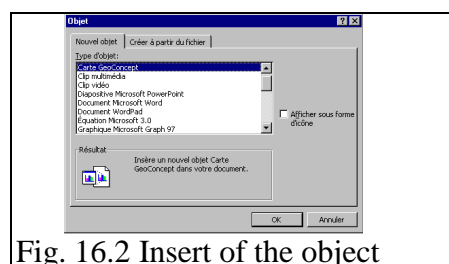


Fig. 16.2 Insert of the object

(3) The design layout

To design the form, layout the object of GeoConcept, title and some annotations. If necessary to change the position of the object, select “Affichage->Barresd’outils->Commandes” in the menu bar of Excel, and click the icon of “Mode Création” (see Fig. 16.3) and implement to layout. Drag and drop at the corner of the object by the mouse. Click the icon of “Mode Création” again and finish to edit.



Fig. 16.3 Design of layout



Fig. 16.4 Selection of GeoConcept file

(4) Set up the GeoConcept data

Move the cursor to set up the configuration of GeoConcept.

Click the right button and select the data file of GeoConcept. (See Fig. 16.4.)

Refer to the manual for the detail of GeoXplorer as shown in Fig. 16.5.

Main functions are as follows:

- Open a GeoConcept file (“Ouvrir une carte”).
- Mouse mode (“Modes souris”)
- Rectangle selection: Selection of object by rectangle area
- Distance selection: Selection of object by radius from cursor.

(See Fig. 16.6.)

- Grabber: PAN of GeoConcept file
- Zoom +: Zoom in
- Zoom - : zoom out
- View tab: Selection of View tab in GeoConcept file  
Visibilités
- View position: Position
- Full map: Fit data on Map

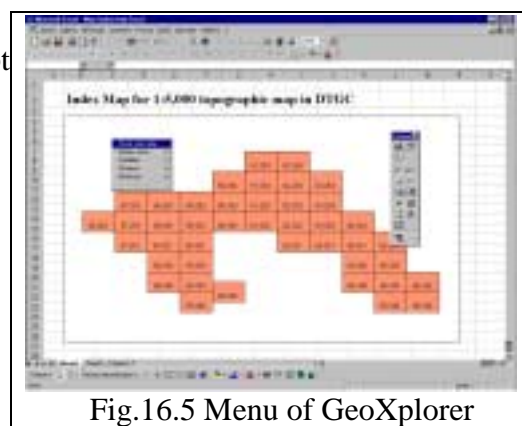


Fig.16.5 Menu of GeoXplorer

- frame
- Distance:
- Info BOX Mini fiche
- Mode selection of “Active” or “Inactive”: Selection mode to refer data property of object data
- Set up: Set up the configuration to display data property
- Information
- Display of the property selected object by Rectangle selection and Distance selection. (See Fig. 16.7.)

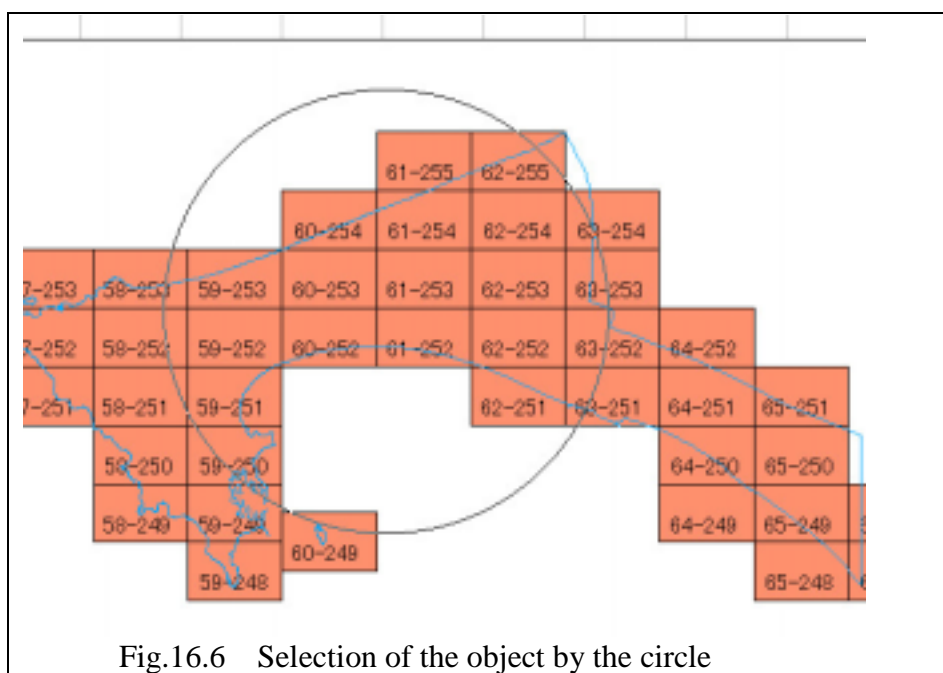


Fig.16.6 Selection of the object by the circle

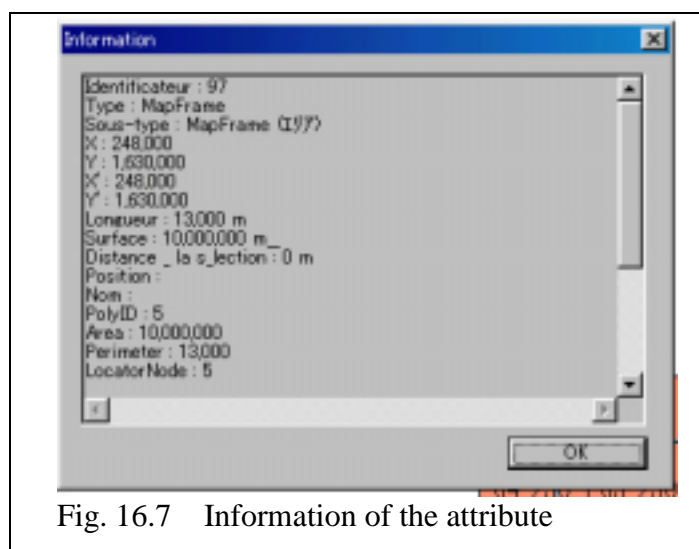


Fig. 16.7 Information of the attribute

## 17. Bugs in MIF file

### 17.1 Bugs in MIF file in Importing

The study team found two problems in the field survey.

Although GeoConcept supports importing MIF file, the export file of MIF file in Cartalinx and IDRISI32 causes bugs in importing a file in GeoConcept. If this file is produced in MapInfo, there is no problem. Therefore, it is necessary to fix this bug to modify the data structure.

#### (1) In the case of LINE data in MIF file

BUG: All of the data can not be imported to GeoConcept.

Solution: This data needs to use the bug fix program 'MIFLINE.exe' in the holder of e:\ cprg.exe in PC. This program modifies the data structure of the MIF file in Cartalinx and IDRISI32. The operation is as follow:

- Open the MSDOS WINDOW.
- Copy MIF file to the holder of the program file e:\ cprg.
- Execute MIFLINE
- The user enters only the input file name and the output file name.
- Copy and overwrite the output MIF file.
- Import MIF file into GeoConcept

#### (2) In case of Polygon data

BUG: The last polygon can not be imported into the GeoConcept.

Solution: Use editor and Edit MIF file as follows:

- Open the MIF file in the NOTE PAD, MSWord or other editor.
- Move to the end of the MIF file.
- Insert the following record at the end of file.  
Pen ( 1, 2, 0 )
- Save the MIF file.
- Import this MIF file to GeoConcept.

### 17.2 Bugs in MIF file in Exporting

BUG: The export file of the MIF file in GeoConcept causes the problem when it is imported in CartaLinx and IDRISI32. It causes an error and stops processing. There is no problem when using MapInfo.

Solution:

The bug fix method is as follows:

(1) Modification of data structure of MIF file

- Open the MIF file by NOTEPAD or MSWord or other editor.
- Insert the following line at the third line.  
    Delimiter " , "
- Save the MIF file.

(2) Modification of data structure of MID file

Change the data format to CSV format ( , delimiter) in MSEXcel.

- Open MID file in Excel.
- File types are all and select MIF file.
- The option is selected to tab delimiter and space delimiter.
- Save as CSV text and overwrite the file.

### **17.3 The fact of Exporting File of MIF in GeoConcept**

The MIF file is converted to the decimal degree of longitude/latitude in WGS 84 automatically. When the client user imports this data in the GIS software, it is necessary to convert the map projection. This is not a problem. The user must know the data status of the MIF file in GeoConcept.



## **TOPIC 1. Digitizing of scanning data**

Raster digitizing is a useful mapping module to acquire the geographic feature on the scanning data with the georeference data. There are two data sources for digitizing the scanning data as follows:

- (1) Analog map including paper map overlay map, traced map, etc.  
The data needs to be converted from the analog to the digital data by a scanner before digitizing. This data must be processed to provide the georeference.
- (2) Digital data with the georeference including map imagery, orthophoto, satellite imagery.  
The data includes raster data of GIS data, which provides the georeference, and the user can digitize GIS data on display directly.

There are three methods to digitize raster data on display as follows:

- 1) CartaLinx
- 2) GeoConcept
- 3) Arc/Info

For the detailed operation, refer to the manual of the software.

**Note:** Raster digitizing is easy to get vector data. This data needs image processing of scanning data. On the other hand, the GIS data can be acquired effectively using a tablet digitizer. The choice of Raster digitizing or Tablet digitizing must be decided by the user who considers the volume and working step properly. Raster process needs a sufficient capacity of CPU and RAM memory to get a good performance.

The procedures to process the raster data will be described below:

### 1. Data acquisition of scanning data

- (1) Preparation of map for scanning

The following is the key points to work effectively before using a scanner.

- Items in the original map must be clear and identified to be digitized on scanning data.

- In case that the map conditions are poor in quality, make an overlay using polyester base or tracing paper including the necessary items and GCP as mentioned in the next step.

Complete the preparation for the scanning.

- Arrangement of map coordinates at GCP on map  
Reconfirmation of GCP and check the map coordinates.

## (2) Scanning

Process the raster data by a scanner. It is necessary to define the resolution to keep the precision of the original map and to obtain the necessary data size to get the suitable performance in digitizing.

## 2. Georeference data in the case of IDRISI32

Scanning data must be converted to the geographic imagery. The procedures will be as follows:

### (1) Import scanning data.

Scanning data is imported by the import command.

### (2) Measure the GCP on raster data using resample command.

To make the file for correspondence between the scanning data and the map data, measure the scanning coordinate on display. GCP must be taken in consideration with the balance of the selected point on map. The number of GCP points depends on the precise of mapping transformation.

In the case of linear transformation, at least four points are necessary to be selected. In the case of quadratic, at least six points are necessary.

The correspondence file is needed in IDRISI32 and CartaLinx for Resample command.

### (3) Creation of the correspondence file

Use edit command in IDRISI32.

Example of data format of the correspondence file.				
12				<= Number of GCP
1208	10302	253000	1627000	<= Pair of xy on scan data and XY
2781	10260	253000	1628000	
4360	10227	253000	1629000	
5932	10190	253000	1630000	
1132	7092	255000	1627000	
2704	7112	255000	1628000	
4283	7077	255000	1629000	
5856	7044	255000	1630000	
1017	2436	258000	1627000	
2588	2394	258000	1628000	
4166	2360	258000	1629000	
5741	2324	258000	1630000	

(4) Geometric correction

Confirm the range of area at the X and Y coordinates to process data.

The resolution for re-sampling data must be considered by the user.

Implement to the resample command.

(5) Convert the available image format from the image file in IDRISI32.

There are several choices in IDRISI32 as follows:

To CartaLinx: IDRISI raster file, JPG, TIFF and BMP are available.

To GeoConcept: TIFF and BMP are available

To ArcInfo: Eadas file of LAN and GIS, TIFF and BMP are available.

3. In case of CartaLinx

CartaLinx can process the IDRISI32 raster data directly. The correspondence file is used directly in the Resample command. At the same time, the scanning data is imported automatically when the georeference data is provided.

## **TOPIC 2 Data issues of import and export in GeoConcept**

### **1. Import and Export in GeoConcept**

There are several methods to exchange data for importing and exporting in GeoConcept among the other GIS software in IIMS as follows:

- 1 GeoConcept export format
- 2 DXF format
- 3 MIF format
- 4 Shape format

### **2. The problem of MIF file in GeoConcept about data importing**

MIF, so-called MapInfo Inter exchange Format, is a useful data format for data exchange against the relevant GIS software in GeoConcept. If the user holds the MapInfo software, there is no problem about data conversion. However, there are some data problems if no MapInfo is available. Here is the solution to this problem in IIMS. IIMS already installed in the software of CartaLinx and Idrisi32. The problem and the solution of the MIF file in IIMS will be described below.

#### **2.1 Problem of MIF File in Idrisi32 and CartaLinx**

There are two problems in the software that the study team found at the present.

##### **(1) Problem of polygon**

Problem: Missing of the last polygon data in importing to GeoConcept.

If the user found this problem, it is necessary to edit data file as follows:

Solution 1: Editing method by editor.

This method is proposed to import data every time.

Use the NOTE PAD or MSWord or other editor to edit MIF file.

Open MIF file.

Insert the next line at the end of file: Pen ( 1, 2, 0 )

Save MIF file.

Import MIF fill-in GeoConcept.

Solution2: Use MapInfo

MIF file in Idrisi32 or CartaLinx is imported in MapInfo, and MapInfo makes an export file of MIF properly.

Solution 3: Use Catralinx

One polygon file should be appended to the adjacent polygon missing in the CartaLinx and process the topology of polygon.

Make an export file of MIF again.

Import MIF file to GeoConcept

## 2.2 Problem of line data of MIF file in Idrisi32 and CartaLinx

Problem: Line data of MIF file in Idrisi32 and CartaLinx is not imported to GeoConcept.

This causes by the data structure between the software's. Data position will be displaced to the following structure as shown below.

Original MIF file	
PLINE	
5	
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX

MIF in Idrisi32 and CartaLinx

Corrected MIF file	
PLINE 5	
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX
XXXXX	XXXXXX

MIF in MapInfo

Solution 1: Use the bug fix program of MIFLINE.exe.

Before processing MIFLINE, edit the space in the definition of the character in the header part of MIF file by using editor or MSWord. Delete the space between the character and ( ) shown in the below.

```

Version 3
Charset "WindowsLatin1"
Delimiter ","
CoordSys Nonearth
  Units "m"
  Bounds (227543.131000,1620562.700000)(258188.000000,1639480.631000)
Columns 9
  ArcID integer
  ArcType char (20)          <= delete the space between char and (20)
  FromNode integer
  ToNode integer
  LeftPoly integer
  RightPoly integer
  Length float
  NumericUserId integer
  TextUserId char (50)      <= delete the space between char and (50)
Data
Pline          <= This line and the next line will be modified by
               program automatically or manual editing
19
2.33835142000000E+0005  1.62822576000000E+0006
2.34013933000000E+0005  1.62833003500000E+0006
2.34340422000000E+0005  1.62849570600000E+0006
    
```

The preparation of MIFLINE.exe is as follows:

- 1 Open the MSDOS window.
- 2 Copy MIF file to the program holder ' E:\Cprg in PC.
- 3 Execute the bug fix program MIFLINE.EXE.
- 4 Enter the input file name of MIF file.
- 5 Enter the output file name of MIF file.
- 6 Copy and overwrite the existing MIF file.
- 7 Import MIF files to GeoConcept.

Solution2: Use MapInfo to import MIF file to MapInfo and make an export MIF file again.

Solution 3: Manual editing against a data problem by Editor.

Open MIF file by editor.

Delete the carriage return after PLINE in the MIF file manually.

Save MIF file.

Import MIF file to GeoConcept.

## Data issues of Export File of MIF in GeoConcept

### 3.1 Reference Unit in MIF File

The exporting file of MIF in GeoConcept is converted automatically to the decimal degree of longitude/latitude in WGS 84. When the user imports this data to GeoConcept again, this data in the client software must be converted to the different projection. This is not a problem. If the user holds the MapInfo, there is no problem. The user can import MIF file to MapInfo and make an export file based on the reference unit of meter in MapInfo again. The MIF data using IDRISI32 and CartaLinx in IIMS will be described below.

(1) Import MIF file to IDRISI32

- 1 Import MIF files in IDRISI32.
- 2 Confirm the contents of the map projection in metadata module.  
Reconfirm these parameters as follows:  
Map unit is LatLong.  
Distance unit of map is Degree.
- 3 Transform the imported data from Lat/Long to Senegal UTM-28N by using Project command. Senegal UTM-28n is already preset in the IIMS.
- 4 Make an export MIF file.
- 5 Export data to GeoConcept.

(2) Import MIF file to CartaLinx

- 1 Import MIF file in CartaLinx.
- 2 Confirm and edit the map projection in the Georeference of the Preference module.  
Reconfirm these parameters as follows:  
Map unit is LatLong.  
Distance unit of map is Degree.
- 3 Implement to Project command  
Select the UTM projection in Senegal.(See Fig.3.2.)
- 4 Make an export file after modified data.
- 5 Import MIF file to GeoConcept.

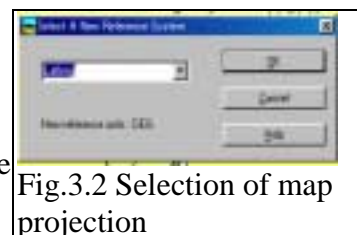


Fig.3.2 Selection of map projection

### 3.2 Bugs of MIF file in exporting

BUG: The export file of MIF file in GeoConcept causes the problem when importing it in CartaLinx and Idrisi32. It causes errors and it stops processing. Although there is no problem when using MapInfo, the software of the third party has the problem.

Solution:

The bug fix method is as follows:

(1) Modification of data structure of MIF file

- Open MIF file by NOTEPAD or MSWord or other editor.
- Insert the following line at the third line.  
Delimiter “ , ”
- Save MIF file.

(2) Modification of data structure of MID file

Change the data format to CSV format ( “ , ” : delimiter) by this operation.

- Open MID file as the text file in MSEXcel.
- Change the file types from the default to all and select MID file.
- The option is selected to tab delimiter and space delimiter.
- Confirm the imported properly in Excel.
- Save as CSV text file and overwrite the file.

#### 4. Data Conversion of Existing Digital Data to croquis of GeoConcept

Croquis data is widely used in DTGC, DUA and the related agencies in Senegal. It is said that the map coordinates do not correspond to the coordinates of 1:5,000 map. How to adjust the existing data into the map of 1:5,000 scale in DTGC and the spatial data infrastructure of the project will be explained below.

The present croquis data in DTGC and DUA are as follows:

The X coordinate of croquis coincides with that in the 1:5,000 map, and the Y coordinate of that is shifted about 1,000,000 meters along the Y-axis. Therefore, this data doesn't coincide with the 1:5,000 topographic map. In addition, the map projection in GeoConcept is used for the expanded Lambert II in French coordinates, so that nobody can process to transform GeoConcept data to WGS84 or the other map projection. The map projection of the existing croquis data must be modified to adapt to Senegal UTM data. The following is the conversion method of exiting data:

(1) In case of the usage of GeoConcept exchange format and DXF file

An export file of all the croquis is created in the present data condition.

Create the new GeoConcept file based on the map projection of Senegal UTM.

Import all of DXF file to GeoConcept.

Select all the data by the query or “CTRL+A“command.

Select the module of transform module and Shift the 1,000,000-meters along Y-axis.

Enter the distance of 1,000,000 meters against Y-axis and Execute.



- (2) Change the definition of data area in the module of file menu.  
Select “File-> Information”.  
Calculate the data area.  
Update the information.
- (3) In case of GeoConcept exchange format
  - 1 Create the export file on GeoConcept.  
GC model file and ASCII GC TEXT file are exported by the user.
  - 2 Edit the number of SysCoord in ASCII GC TEXT file by editor according the preset number of Senegal UTM.

Example of the editing

---

```
//$FIELDS Class=HABILLAGE; Subclass=Texte d'habillage; Kind=3
//$SYSCoord {Type: 901 } <= Type901 is Senegal UTM in the configuration file in IIMS.
//$UNIT Distance:m
//$FORMAT 1
```

- 3 Create the new file that is defined as the Senegal UTM-28N and the reference unit of the centimeter.
  - 4 Import GC Model file and ASCII GC TEXT file.
  - 5 Select all the objects and shift the distance about 1000 kilometers along the Y-axis by transform.
  - 6 Define the file information to set up the area.
- (4) In case of DXF
    - 1 Create all DXF files in each class / sub-class.
    - 2 Create the new file that is defined as the Senegal UTM-28N and the reference unit of the centimeter.
    - 3 Import DXF file and ASCII GC TEXT file.
    - 4 Select all the objects and shift the distance about 1000 kilometers along the Y-axis by transform.
    - 5 Define the file information to setup the area.

## **6. Issue of Difference in Keyboard Type and Unit**

The French type of keyboard can treat the special characters and the unit is different from the American standard such as period ( . ), comma ( , ), semi-colon ( ; ), colon( : ) and etc.

When the user treats French special characters from a French type keyboard in CartaLinx and IDRISI32 made in the USA, there are some problems to unable the use of French characters in the software.

The French font package of IDRISI32 and Cartalinx is still not released to the market. The previous version provides the French font package. In addition, it is necessary to change the unit environment in PC as mentioned above. GeoConcept is made in French.

## Reference: Data Exchange in IIMS

IIMS uses the GIS software and the mapping software including GeoConcept, IDRISI32, CartaLinx and Arc/Info. The data exchange between the software and the data format in importing and exporting is shown in Fig.1. Though the available format is different in software, it is supposed to use the following data exchange format in IIMS frequently:

(1) MIF format

MIF file in MapInfo can be imported and exported among GeoConcept, IDRISI32, CartaLinx directly. Pay attention to the bugs in MIF as mentioned before.

(2) SHP format

The SHP format in ArcView and Arc/Info is exported by GeoConcept and is imported and exported between IDRISI32 and CartaLinx directly.

(3) DXF format

The DXF file is available for all of the software. However, data exchange is in the level of the release 12 of DXF file. All of the layer data must be prepared for the DXF files in use.

In case of Arc/Info:

Import to the DXF file and process the topological data.

Convert it to the Ungenerate File or shape the file.

Import to IDRISI32 or CartaLinx.

In case of IDRISI32:

Import it to IDRISI32.

Import the IDRISI32 format in CartaLinx or use the other available export format between IDRISI32 and CartaLinx.

(4) Other format

Any other format is imported and exported to CartaLinx or IDRISI32 via the available format in other GIS software.

In ArcInfo, there is a text format of the Generate File and the Ungenerate file. These file formats are available for IDRISI32 and CartaLinx. These files can be treated as line data, point data and polygon data of both combinations in IDRISI32 and CartaLinx. The unregenerate and generate file of polygon data must be separated from the line data and point data of the label of polygon individually.

The point data has the label of the attribute data and key field. This can be linked to the relational database of Text file or MSAccess in IDRISI32 or CartaLinx.

**Figure1 Data compatibility of vector data format and raster data in IIMS**

Format / software	Arc/Info	GeoConcept	IDRISI32	CartaLinx
<b>Vector data</b>				
ArcInfo Exchange format E00File :	E00	E00		
Shape file :	Shp	Shp		
Generate File :	Shp		Shp	Shp
DXF file :	Generate file		Genarate file	Generate File
MIF file :	DXF	DXF	DXF	
Idrisi Vector file :		MIF	MIF	MIF
			Idrisi VectorFile	Idrisi Vector File
<b>Raster data</b>				
TIFF file :				
BMP :				
JPG :				
ERDAS(LAN,GIS) :				
IDRISI RASTER :				
<b>Database</b>				
Text :				
dBASE(Shapefile) :				
MSAccess :	*ODBC	*ODBC		

**Table1 Data issues and solution of MIF file among GeoConcept , IDRISI32 and CaltaLinx in IIMS**

MIF file in IDRISI32 and CaltaLinx :	Issues in GeoConcept	Solution
Polygon :	Last polygon missing	Necessary to edit MIF file to add one line” Pen (1,2,0)” at the end of file.
Line :	Impossible to import	Necessary to process the batch process of the modification data structure by MIFLINE
Point :	no problem	Nothing
ALL MIF file :		Use MapInfo to make export file.

MIF file in GeoConcept	Issues in drisi32, CartaLinx	Solution
Polygon, line, point :	Impossible to import	Necessary to edit MIF file and MID file as follows: 1. Insert one line at the third line as follows: Delimiter is ‘ , ‘;  2. Edit MID file from Tab delimited ASCII TEXT to CSV of Delimiter kama ASCII TEXT by using EXCEL
All MIF file :		Use MapInfo to make export file