

# **First African Arabian Egyptian GIS GPS Software Compatible with the Most Web Internet Free Open Resources**



**Programmer: Mohamed ElSayed ElShayal**  
<http://FreeSmartGIS.blogspot.com/>

## Contents

- What is Geographic Information System (GIS) ?
- Classification of GIS Software according to Platform environment
- Classification of GIS Data by format type (Vector, texture, Raster, DEM)
- GIS Data Free Open Resources
- **First African Arabian Egyptian GIS & GPS Software**
  - Desktop Map Editor version for Drawing and Editing Shape file and related attribute texture table and converting it.
  - Web GIS GPS Data Collector for viewing and analyzing Shape files Maps in internet Web Browsers.
  - Mobile GIS GPS Data Collector for viewing and analyzing Shape files Maps and Tracking Mobile GPS devices .

# Geographic Information System (GIS)

A Geographic Information System (GIS) is a computer program for storing, retrieving, analyzing, and displaying cartographic data.

- Storing (Spatial vertexes, Attribute Texture Table)
- Retrieving (File processing)
- Analyzing ( Attribute analysis, Spatial analysis, Surface analysis, Shortest path analysis)
- Displaying Cartographic Data (Coordinates System, Fast viewing formulas)
- Convert GIS Shape files to HTML Google Map Web Mapping and Mobile Application

# GIS Software Programming is impacted by various sciences Such as:-

- Geographic
- Surveying
- Graphic
- Data Structure
- Operating Research
- Software Engineering
- Software Programming
- Code Enhancement
- Communications

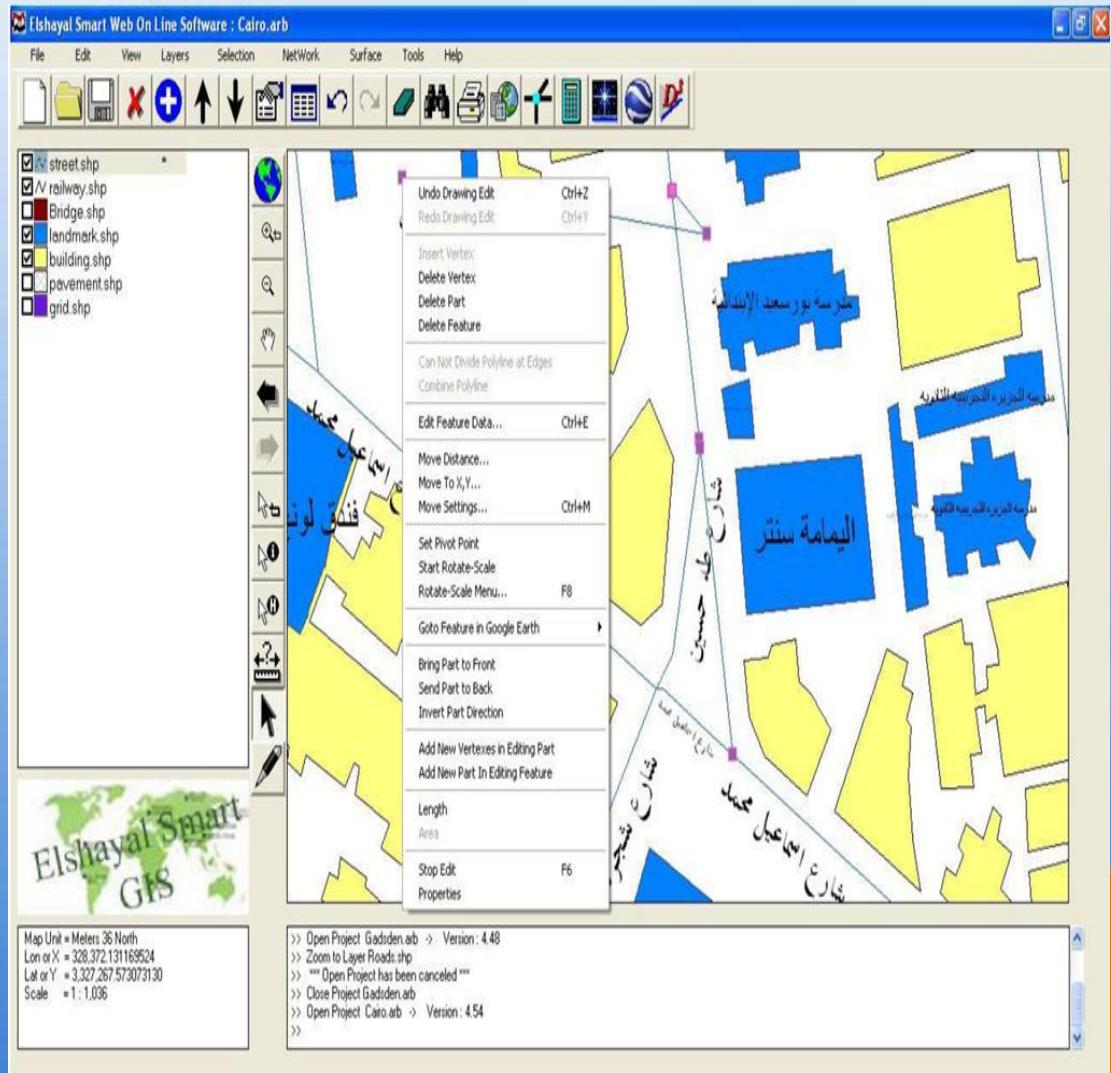
## Classification of GIS Software according to Platform environment

- Desktop GIS Software that work offline on the operating system, and it usually cover all GIS and GPS functions
- Web Browser GIS Software that work online on the Server and it usually just cover viewing, tracking, and analyzing functions
- Mobile GIS GPS Software that work online and use all the mobile device functions

## Classification of GIS Data by format type (Vector, texture, Raster, DEM)

- Vector Based X,Y,Z with related attribute texture table
- Rectified Geo-Reference Raster Satellite Images
- Rectified Geo-Reference Digital Elevation Module (DEM)

# Vector Based X,Y,Z with related attribute texture table

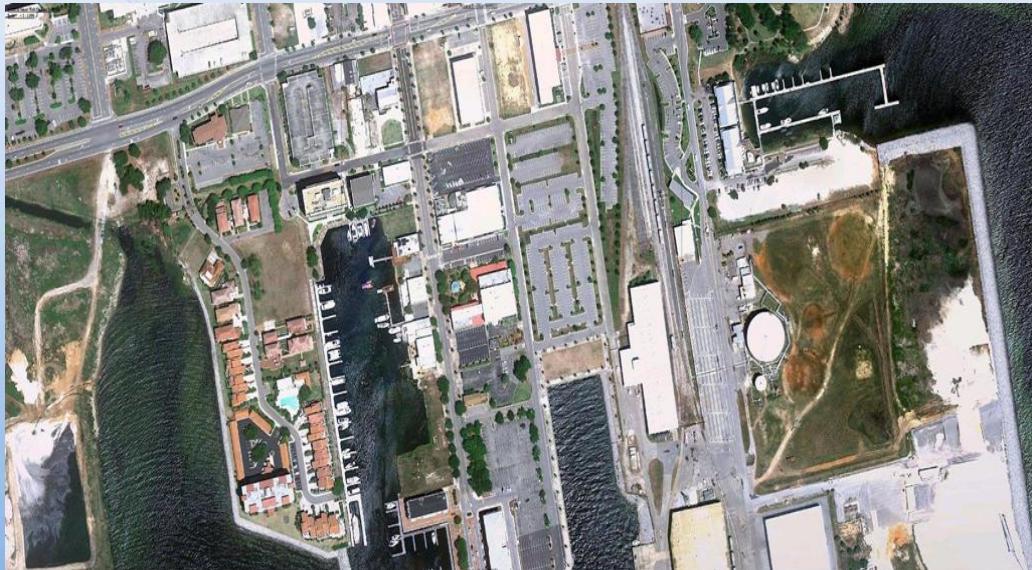


## Vector Based X,Y,Z with related attribute texture table

street.shp : Data Table						
File	Edit	View	Selection	VB Script	Help	
Record	Undo Data Edit	Ctrl+Z	NAME	CODE	SHAPE_LEN	PARTS
1	Redo Data Edit	Ctrl+Y	شارع	0	326535.70012162200	1
2	Select Features		ش	0	326535.70012162200	1
3	UnSelect Features		شارع يو	0	326535.70012162200	1
4	Delete Features		شارع	0	326535.70012162200	1
5	UnDelete Features		شارع عبد الـ	0	326535.70012162200	1
6	Edit Feature Data...	Ctrl+E	شارع علم	0	326535.70012162200	1
7	Cut	Ctrl+X	شارع حـ	0	326535.70012162200	1
8	Copy	Ctrl+C	شارع	2	326535.70012162200	1
9	Past	Ctrl+V	شارع	0	326535.70012162200	1
10	Fill Past		شارع	0	326535.70012162200	1
11	Fill Series...		شارع	0	326535.70012162200	1
12	Clear Cells	Shift+Del	شارع لطيف	0	326535.70012162200	1
13	Sort Rows Ascending		شارع هـ	0	326535.70012162200	1
14	Sort Rows Descending		شارع محمد زغلول	0	326535.70012162200	1
15						

Selected Records = ( 0 out of total 2226 Records )

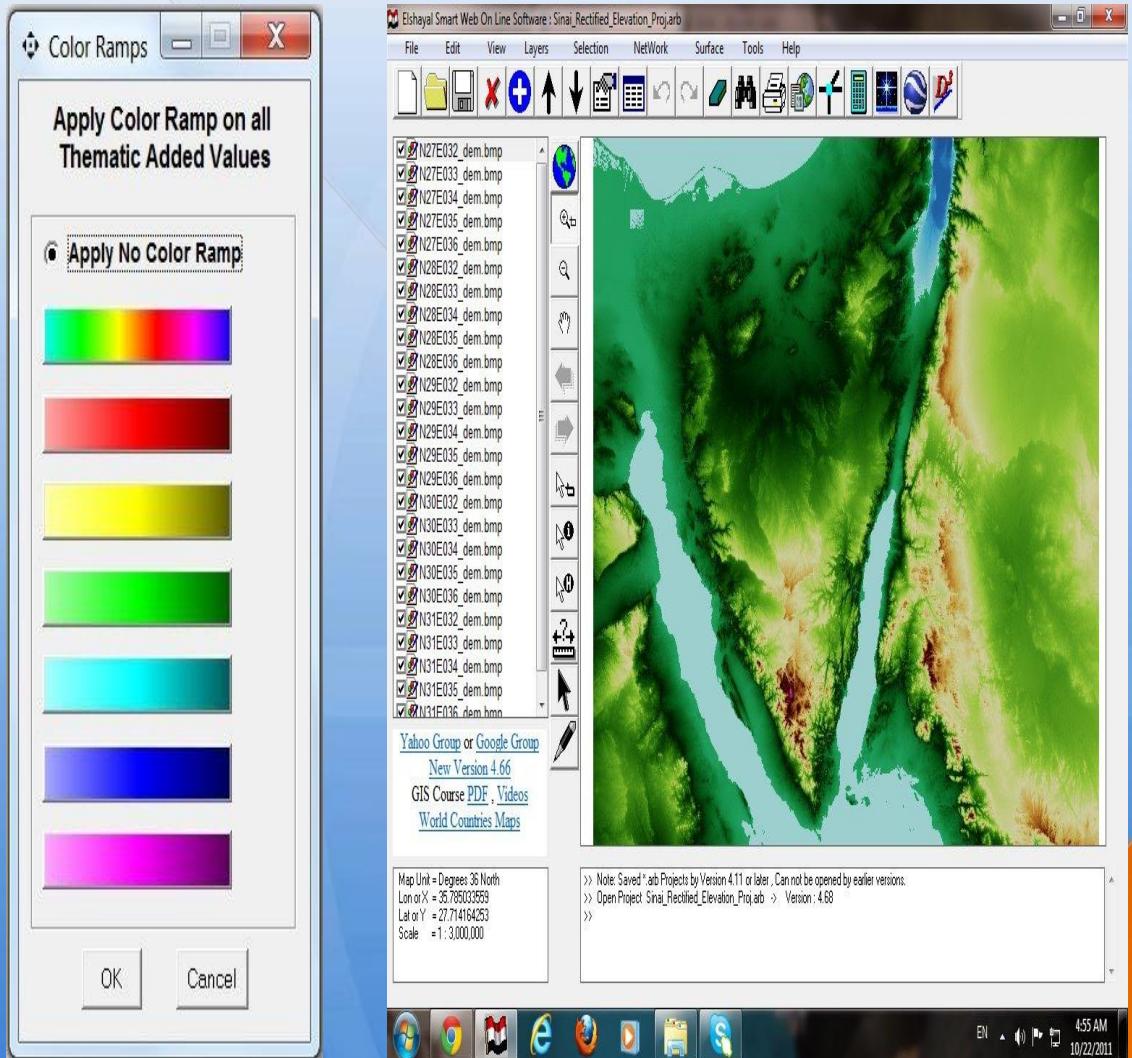
## Rectified Google Earth Geo-Reference Raster Satellite Images



### World File Format

- Line 1: A: pixel size in the x-direction in map units/pixel
- Line 2: D: rotation about y-axis
- Line 3: B: rotation about x-axis
- Line 4: E: pixel size in the y-direction in map units, always negative
- Line 5: C: x-coordinate of the center of the upper left pixel
- Line 6: F: y-coordinate of the center of the upper left pixel

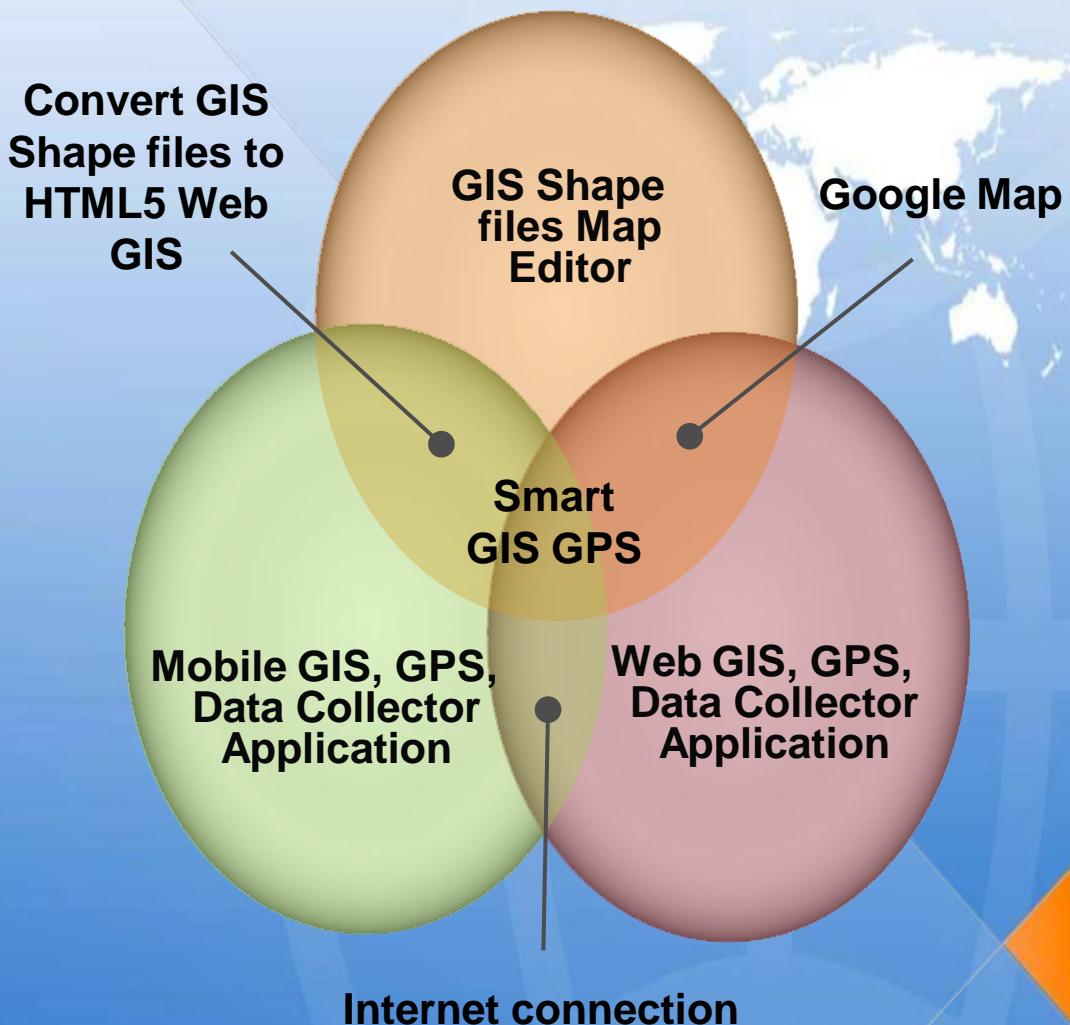
# Rectified ASTER NASA Geo-Reference Digital Elevation Module (DEM)



## GIS Data Open Free Resources

- Shape file extracts by country  
<http://download.cloudmade.com/>
- ASTER GDEM search system  
<http://gdem.ersdac.jspacesystems.or.jp/search.jsp>
- Downloading Rectified Google Earth maps

- 1- GIS Map Editor for building and converting Shape Files
- 2- Web GIS, GPS, Data Collector Application
- 3- Mobile GIS, GPS, Data Collector Application



Smart GIS & GPS Software is Registered 2005 in The  
Office of intellectual property rights protection - (ITIDA)



Smart GIS & GPS Software is Registered 2015 in The  
Office of intellectual property rights protection - (ITIDA)



Smart GIS & GPS Software has received a Thank and Appreciation Certificate 2006 from: Information Technology Industry Development Agency - Egypt



شكر وتقدير



هيئة تنمية صناعة  
تكنولوجيا المعلومات

من هيئة تطوير صناعة تكنولوجيا المعلومات

**ITIDA**

الدكتور: محمد السباعي

تقديراً لتميز عملكم المتقدم للمسابقة القومية للمحتوى الإلكتروني لعام ٢٠٠٦

فوج مجال / نخبة الجمجم



الرئيس التنفيذي

م/أحمد عمران

Information Technology Industry Development Agency

# Certificate for using Smart GIS & GPS Software in Several Projects Financed by the world Bank in Yemen

بسم الله الرحمن الرحيم



المهندسون الاستشاريون المصريون  
Misr Consulting Engineers

REG NO :

رقم الصادر :

DATE : 20 June 2011

التاريخ :

## To Whom It May Concern

Misr Consulting Engineers certifies that "Elshayal Smart GIS Map Editor and Surface Analysis" Software has been used for establishing GIS & Database for its projects inside and outside Egypt, as needed in different tasks such as:-

- 1) Satellite Images
- 2) Geographic Digital Elevation Module (DEM)
- 3) Building and Digitizing GIS Shape and Table
- 4) Converting among different Coordinate Systems
- 5) Convert AutoCAD DXF to Shape and vice versa
- 6) Geo Reference and Rectify Raster Images
- 7) Attribute Database Analysis
- 8) Spatial Analysis
- 9) Surface Analysis

The Software has been used in the following projects:-

- 1) Seyoun and Tarim Sanitation Development Project in Yemen (USD 60 millions)
- 2) Aden Water and Sewage Development Project in Yemen (USD 350 millions)
- 3) Water & Wastewater Master Plan for Gharbia Governorate, Egypt
- 4) Establishing MIS for Groundwater and Soil Conservation Project in Yemen, study financed by The World Bank

This certificate is issued upon the request of Mr. Mohamed Elshayal and with no responsibilities on MCE toward any third party

Eng. Mostafa Abou Hussein  
Director General of Technical Department



### ARAB REPUBLIC OF EGYPT

71B, Mariouta Road – Haram – Giza  
Postal Code: 12561  
Tel: (202) 33853198 - 33851286 - 33851462 - 33851281 - Fax: (202) 33852197  
e-mail: [mce@link.net](mailto:mce@link.net) web site: [www.mce-eg.com](http://www.mce-eg.com)

REPUBLIC OF YEMEN  
Aden - Khor Maksar - Diplomat District - Hoshi Mena Street  
Tel/Fax: (967) 2 237093 - e-mail: [mce@y.net.ye](mailto:mce@y.net.ye)

جمهورية مصر العربية  
71 ب طريق المريوطية - الهرم - الجيزة  
الرمز البريدي: 12561  
ت: (202) 33853198 - 33851281 - 33851462 - 33852197  
الموقع الإلكتروني: [www.mce-eg.com](http://www.mce-eg.com) البريد الإلكتروني: [mce@link.net](mailto:mce@link.net)  
الجمهورية اليمنية  
عدن - خور مكسر - حي السفارات - شارع هوشين منه - تليفون/فاكس: (967) 2 237093  
البريد الإلكتروني: [mce@y.net.ye](mailto:mce@y.net.ye)

# Smart GIS & GPS Software is Presented in Japan-Vietnam

Geoinformatics Consortium (JVGC) Institute for Environment and Resources (IER-HCMC)

<http://wgrass.media.osaka-cu.ac.jp/gisideas06/viewabstract.php?id=180>

← → C [wgrass.media.osaka-cu.ac.jp/gisideas06/viewabstract.php?id=180](http://wgrass.media.osaka-cu.ac.jp/gisideas06/viewabstract.php?id=180)

 **GISIDEAS** **November 9-11, 2006**  
**Ho Chi Minh, Vietnam**

Organized by **Japan-Vietnam Geoinformatics Consortium (JVGC) Institute for Environment and Resources (IER-HCMC)**

[Home](#) > [Papers](#) > [Mohamed ElShayal](#)

 **Mohamed ElShayal**

**A GIS, GPS, Database, Internet GIS software**

Mohamed ElShayal

Full text: [PDF](#)  
Last modified: October 21, 2006  
Presentation date: 11/10/2006 1:30 PM in EH Exhibition Hall  
(View Schedule)

Learn more about [this publishing project...](#)

**Abstract**  
Elshayal Smart software is an almost First Arabian GIS software which completely developed by Arabian developers team and independent of any commercial software package. The software current Features are View and Edit shape files, build new layers, add existing layers, remove layers, swap layers, save layers, set layer data sources, layer properties, zoom in & zoom out, pan, identify, selecting features, invert selection, show data table, data query builder, location query builder, build network, find shortest path, print map, save map image, copy map image to clipboard, save project map, edit move vertex, edit move features, snap vertexes, set vertex XY, move settings, converting coordinate system, applying VB script, copy selected features to another layer, move selected features to another layer, delete selected features, edit data table, modify table structure, edit map features, drawing new features, GPS tracking, 3D view, etc... The software expected Features are: Viewing raster image and image geo-referencing, read other map formats such as DXF Format and Tiger Line Format.



[home](#) | [about organizers](#) | [secretariat](#) | [submission](#)  
[papers](#) | [registration](#) | [organization](#) | [schedule](#)

  
Media Partner

  
Platinum Sponsor

# Smart GIS & GPS Software is Listed in the United Nations Spatial Data Infrastructure (Netherlands Coordination Office) Web Site

<http://www.unsdi.nl/resources/>



United Nations Spatial Data Infrastructure  
Netherlands Coordination Office

Home page » Links

## Links & Tools

SHARE THIS PAGE

Like 13 Tweet 0 Share 3

On the **Links** page we gathered a number of links to relevant organizations. On the **Tools** page you will find links to free downloadable opensource software like metadata catalog servers, GIS packages, etc.



Links Tools

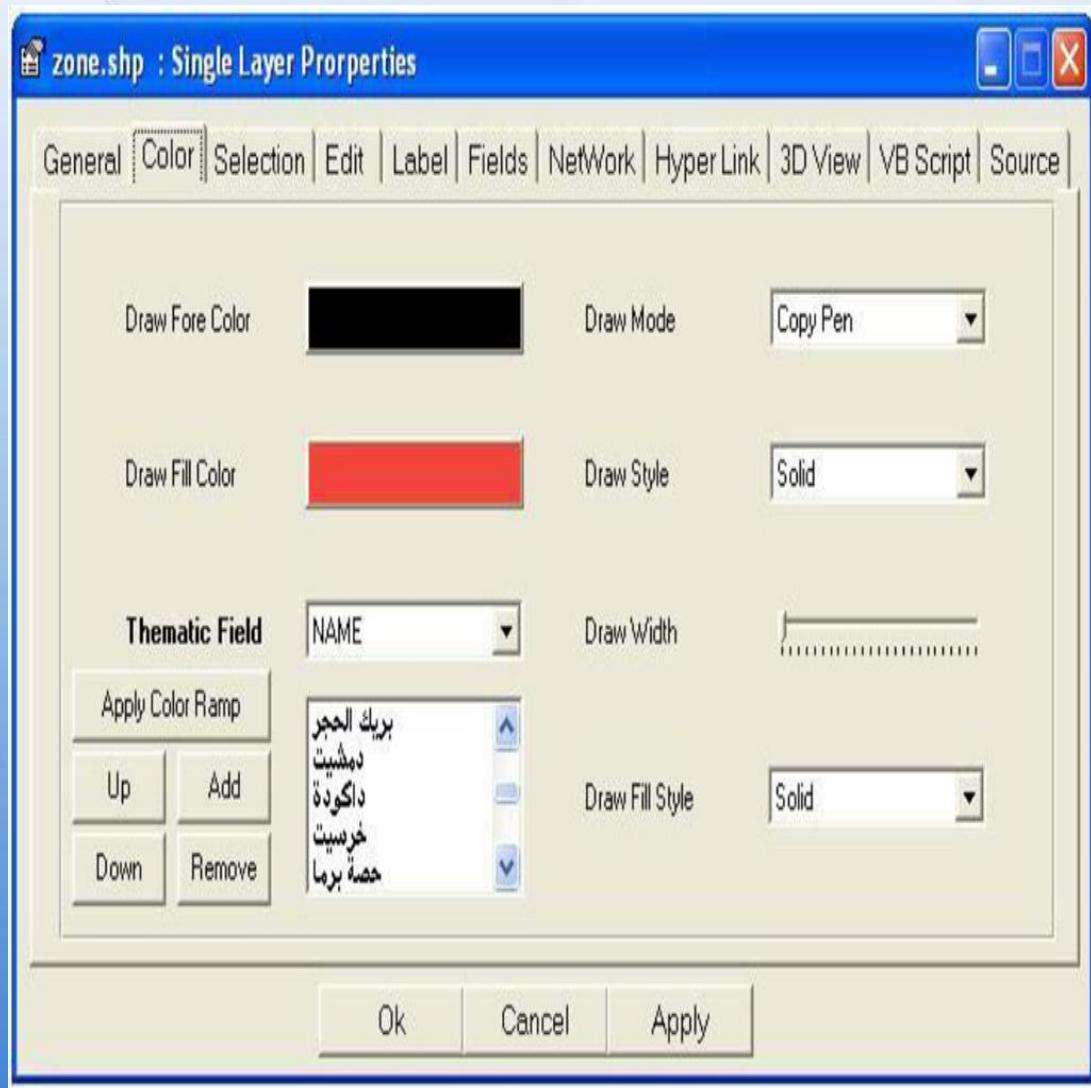
Tool & Description	Download location
<b>GeoNetwork</b> opensource metadata catalog server	<a href="http://geonetwork-opensource.org/software">http://geonetwork-opensource.org/software</a>
<b>ILWIS</b> opensource GIS package developed by ITC	<a href="http://www.ilwis.org">http://www.ilwis.org</a>
<b>GEONETCast toolbox</b> for ILWIS	<a href="http://bit.ly/10FQm0">http://bit.ly/10FQm0</a>
<b>gvSIG</b> opensource GIS package	<a href="http://bit.ly/b20oF">http://bit.ly/b20oF</a>
<b>Ushahidi</b> A tool to easily crowdsource information using multiple channels, including SMS, email, Twitter and the web	<a href="http://www.ushahidi.com/">http://www.ushahidi.com/</a>
<b>Crowdmap</b> To set up your own deployment of Ushahidi without having to install it on your own web server	<a href="http://crowdmap.com/">http://crowdmap.com/</a>
<b>easySDI</b> A simple and ready-to-use solution to deploy a Spatial Data Infrastructure (SDI) based on ISO/OGC standards	<a href="http://www.easysdi.org/">http://www.easysdi.org/</a>
<b>Eshayal Smart GIS Map Editor and Surface Analysis</b> The first Free Arabian GIS Software	<a href="http://freesmartgis.blogspot.com/">http://freesmartgis.blogspot.com/</a>

Home page • Disclaimer • Sitemap

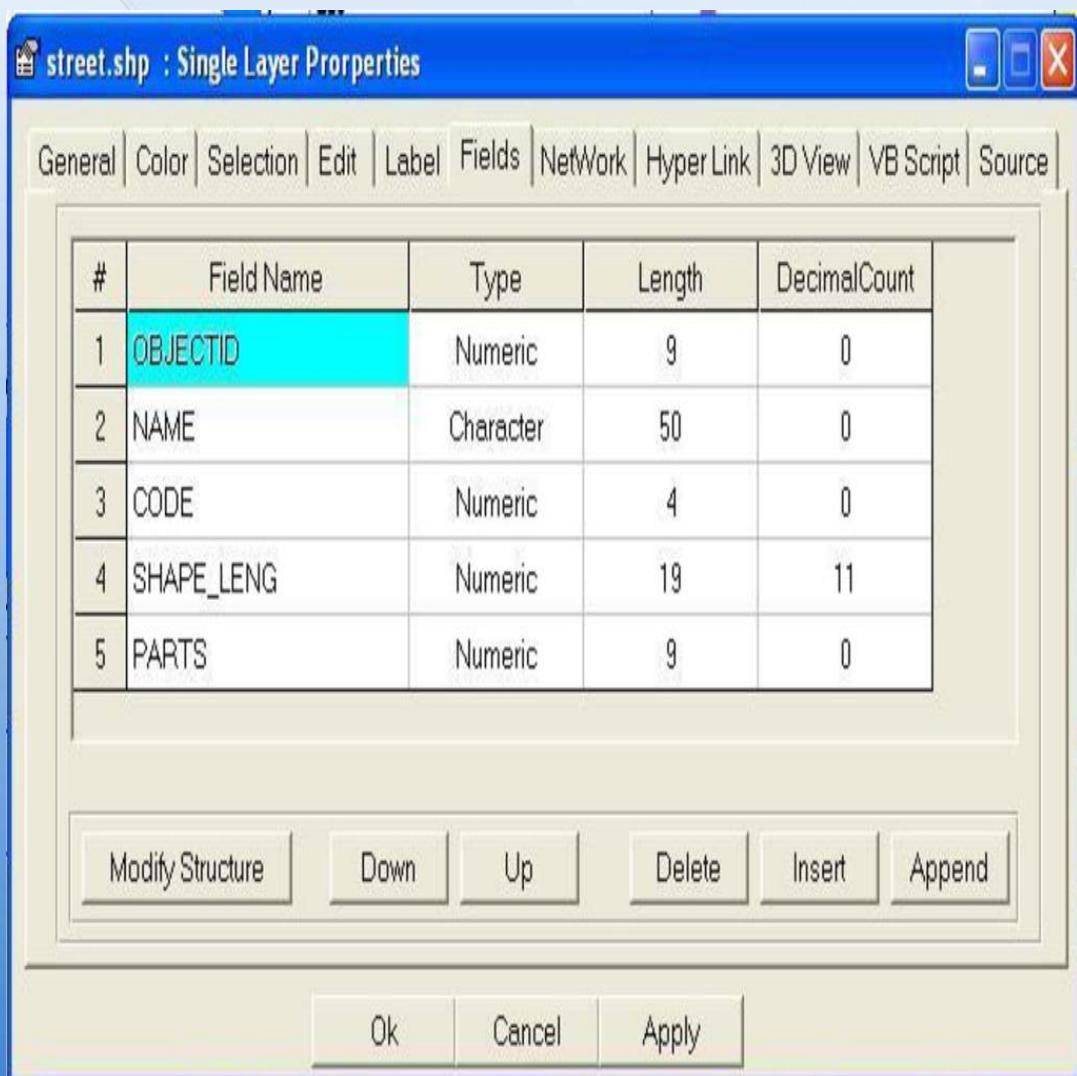
## First: Smart GIS Desktop Map Editor basic functions

- Map Editing and Digitizing
- Convert GIS Shape to AutoCAD DXF File and Vice versa
- Building Tin Surface Analysis
- Building Contour Surface Analysis
- Converting 2D to 3D Surface Analysis
- Calculating 2D and 3D Areas and Volumes
- Convert Vector and Raster Layer Coordinates System between UTM and Geographic Lon-Lat
- Save layout images with written Lon and Lat coordinates to help exporting them to AutoCAD
- Download and save Google Earth Images as rectified images with world file format .jgw
- Makes Google Earth as a Background of your GIS Geographic Lon-Lat Map
- Menu->Tools->Synchronize Google Earth with Geographic Lon-Lat Map
- Convert and use all Transverse Mercator Projections & Transformations
- Convert GIS Shape files to HTML Google Map Web Mapping and Mobile Application

## Modifying Drawing and Color Properties



## Modifying Data table fields Properties

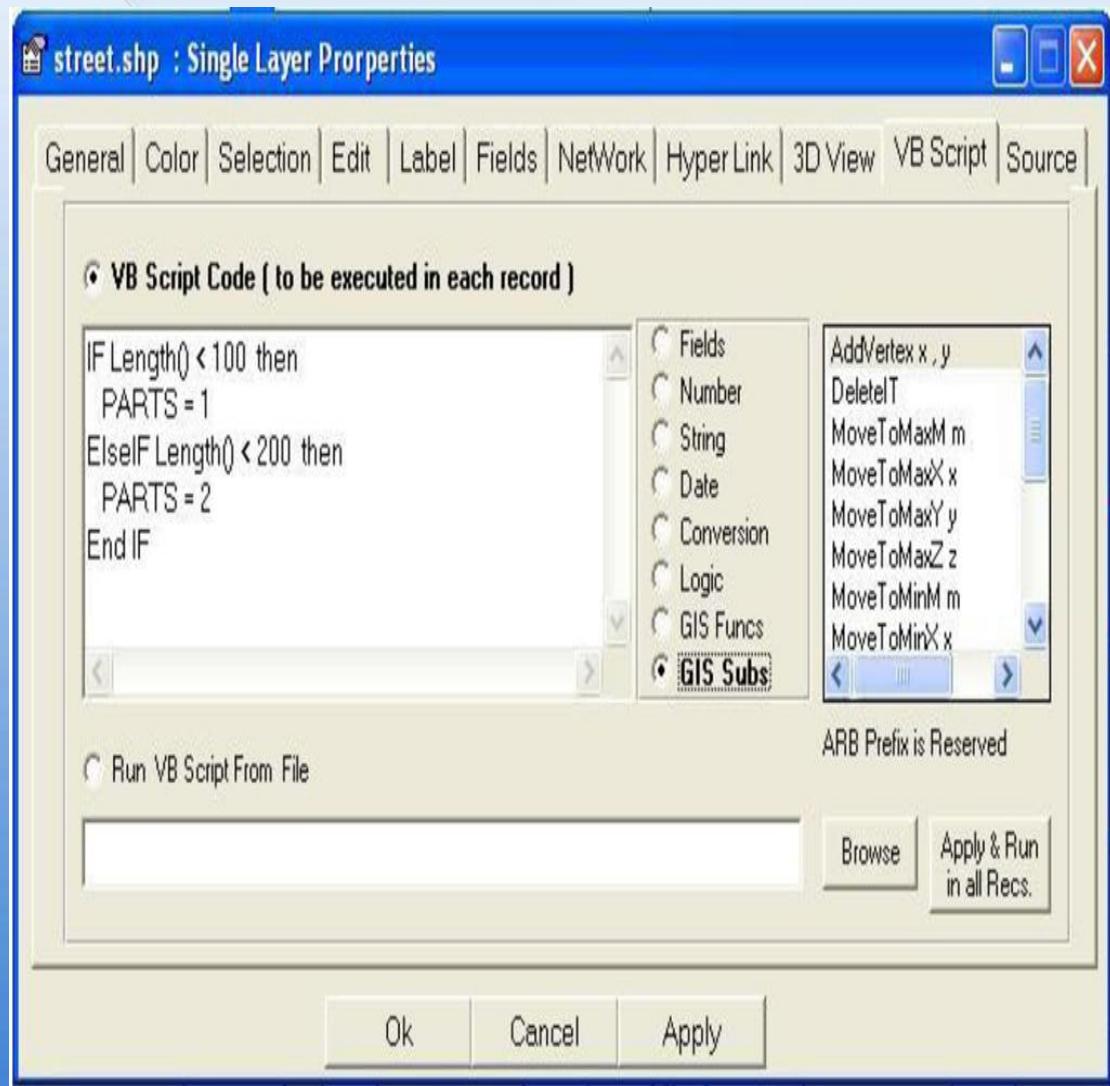


## Modifying Data table contents

street.shp : Data Table					
File	Edit	View	Selection	VB Script	Help
Record	NAME	CODE	SHAPE_LEN	PARTS	
1	شارع	0	326535.70012162200	1	
2	Select Features				
3	UnSelect Features				
4	Delete Features				
5	Undelete Features				
6	Edit Feature Data...	Ctrl+E			
7	Cut	Ctrl+X			
8	Copy	Ctrl+C			
9	Past	Ctrl+V			
10	Fill Past				
11	Fill Series...				
12	Clear Cells	Shift+Del			
13	Sort Rows Ascending				
14	Sort Rows Descending				
15	شارع محمد زغلول	56	326535.70012162200	1	

Selected Records = ( 0 out of total 2226 Records )

## Running VB scripts on the Data Table Fields values (Fields Calculator)



## Configure any new Transverse Mercator Projection

Configure New Transverse Mercator Projection

Datum Name: QND95 / Qatar National Grid

Spheroid Data:

Select Spheroid
Spheroid Name: International_1924
Semi Major Axis: 6378388
Semi Minor Axis: 6356911.94612795
Flattening: 297
ReCalc Minor Axis
ReCalc Flattening

Datum Data:

Central Meridian: 51.21666666666667
Scale_Factor: 0.99999
False Easting: 200000
False Northing: 300000
Latitude Of Origin: 24.45

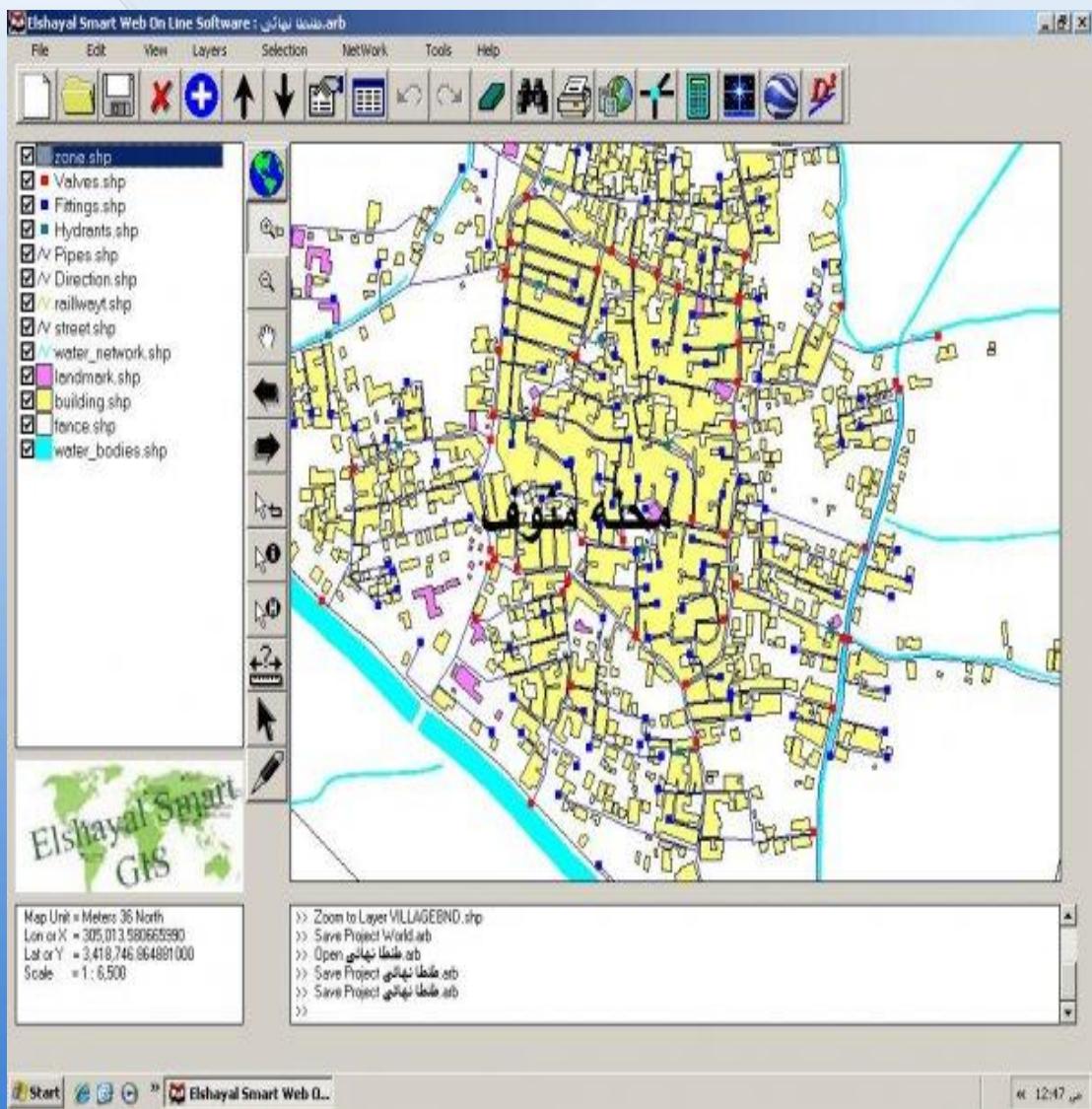
To WGS84 Transformations:

-119.425	-303.659	-11.0006	1.1643	0.174458	1.09626	3.65706
----------	----------	----------	--------	----------	---------	---------

Note : Configure New Transverse Mercator Projection works only with Transverse Mercator projections - For more information kindly please visit :- <http://www.SpatialReference.org>

OK Cancel

## Drawing Water Networks in one of Egyptian Governorates



## Calculating Contours for constructing Small Dams in Yemen

Elshayal Smart Web On Line Software  
Scale = 1 : 2.000

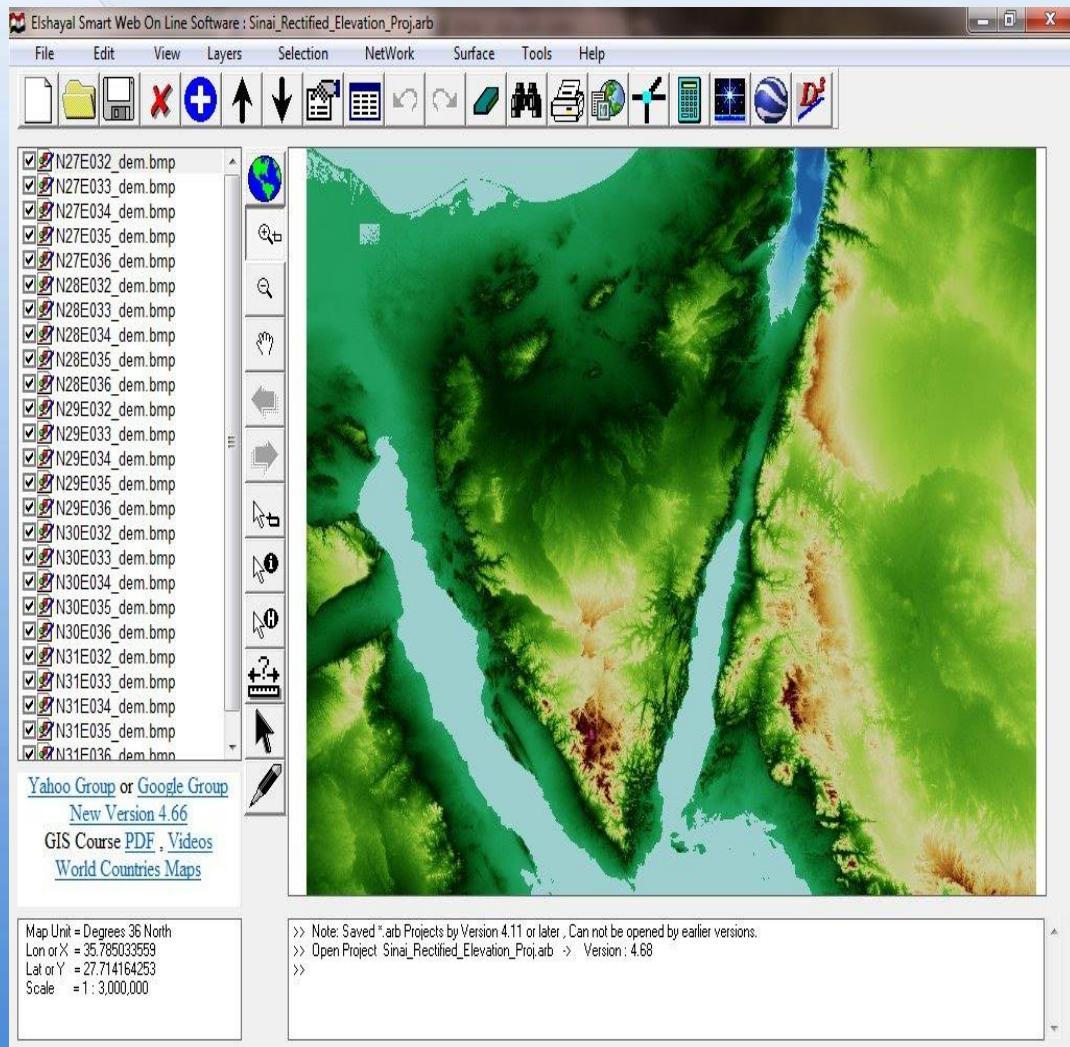
Lat or Y = 1,561,069.5084470900

Lon or X = 631,326.0781798940

Lon or X = 632,196.2858201060

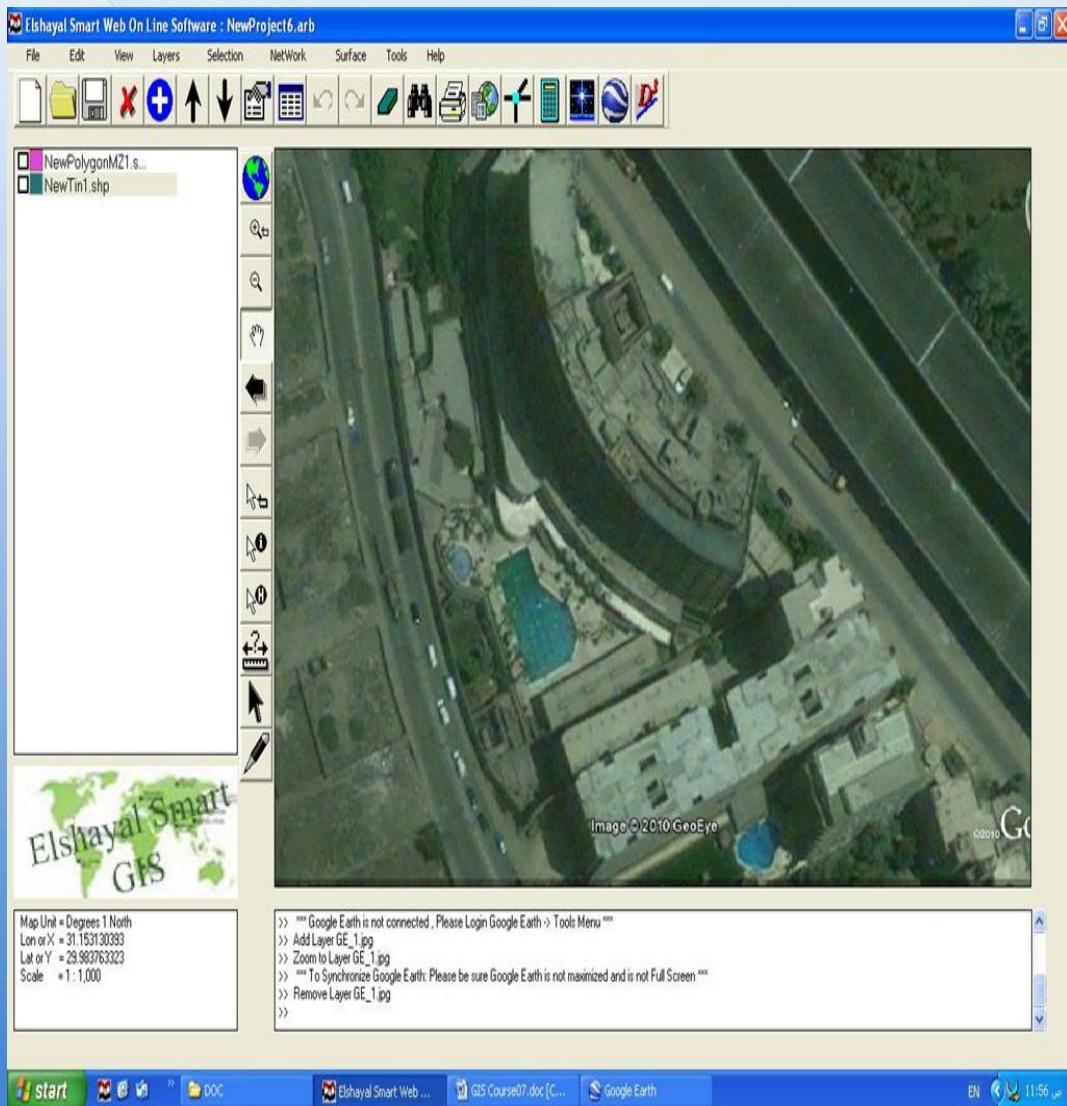
Lat or Y = 1,560,475.3285529100

## Download Rectified ASTER NASA Geo-Reference Digital Elevation Module (DEM)



EN 4:55 AM  
10/22/2011

## Download and save Google Earth Images as rectified images with world file format \*.jgw



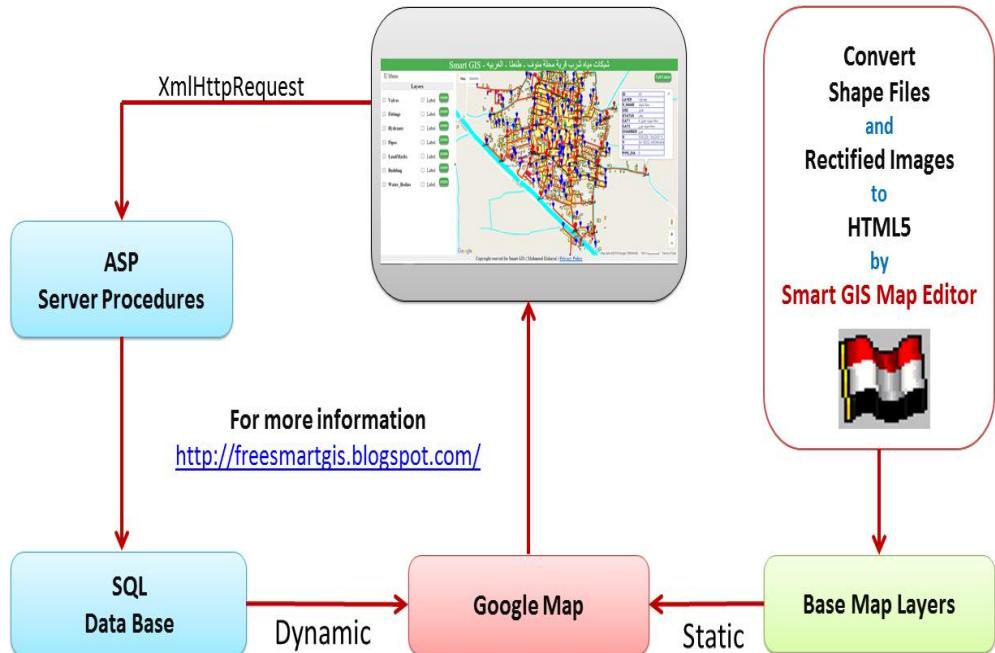
## Converting GIS Shape files to HTML Google Map Web Mapping and Mobile Application

# Smart GIS Convert Shape files to Web GIS

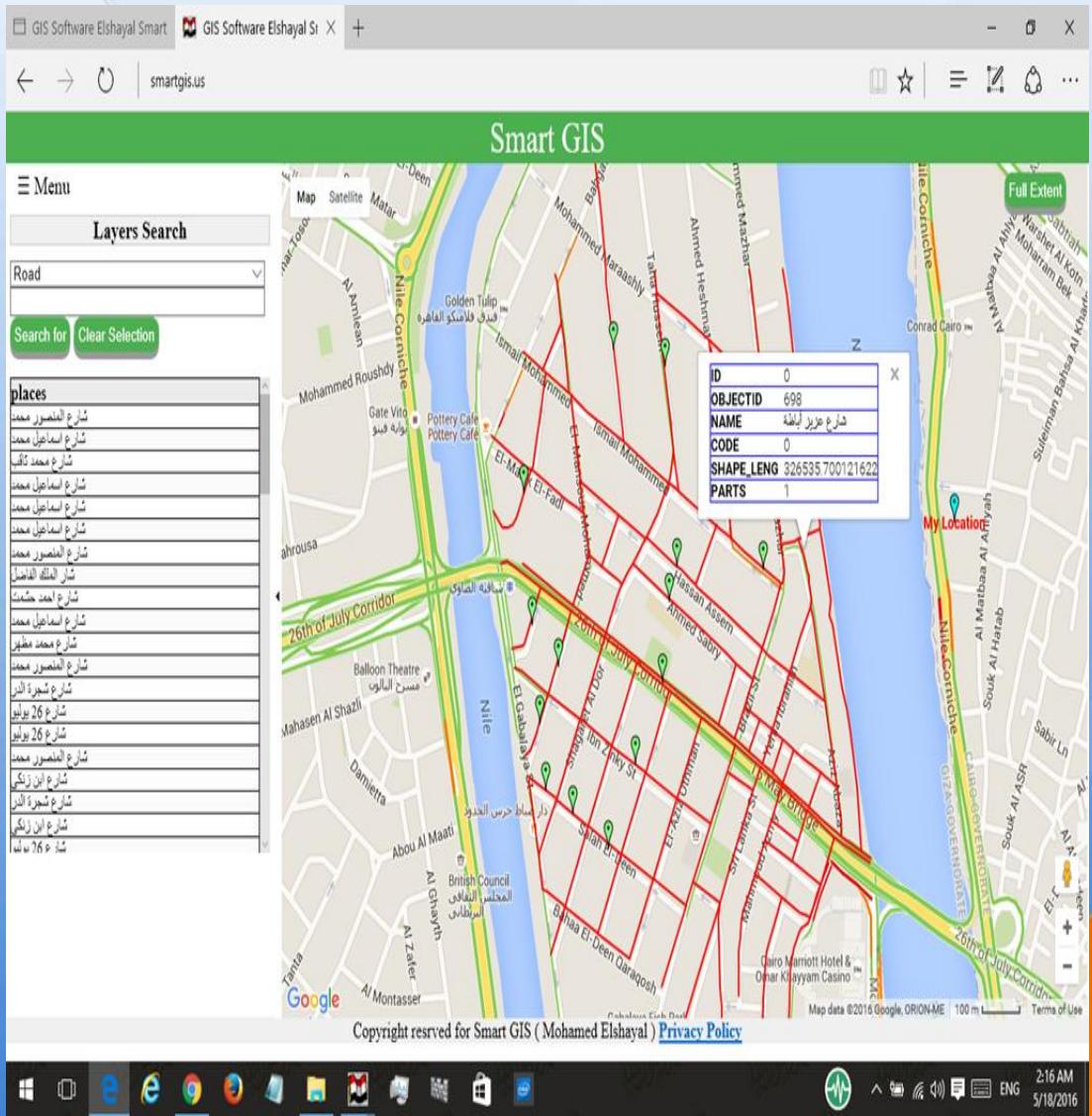
<http://smartgis.us/>

or

<http://egygpstracking.com/>



## Converting GIS Shape files to HTML Google Map Web Mapping and Mobile Application



## Second: Server CGI for viewing & analyzing Shape files in Web Browser

**Elshayal Smart GIS Server and Map Editor and Surface Analysis**  
**Tehran - Iran GIS Shape Files Map**

Zoom In   Zoom Out   Pan

**Menu Search**

LayerNo  
roads.shp

FieldNo None

Relation Like

FieldValue

Scale 0

**Value Search**

LayerNo 14

FieldNo 0

Relation 1

FieldValue

Scale 0

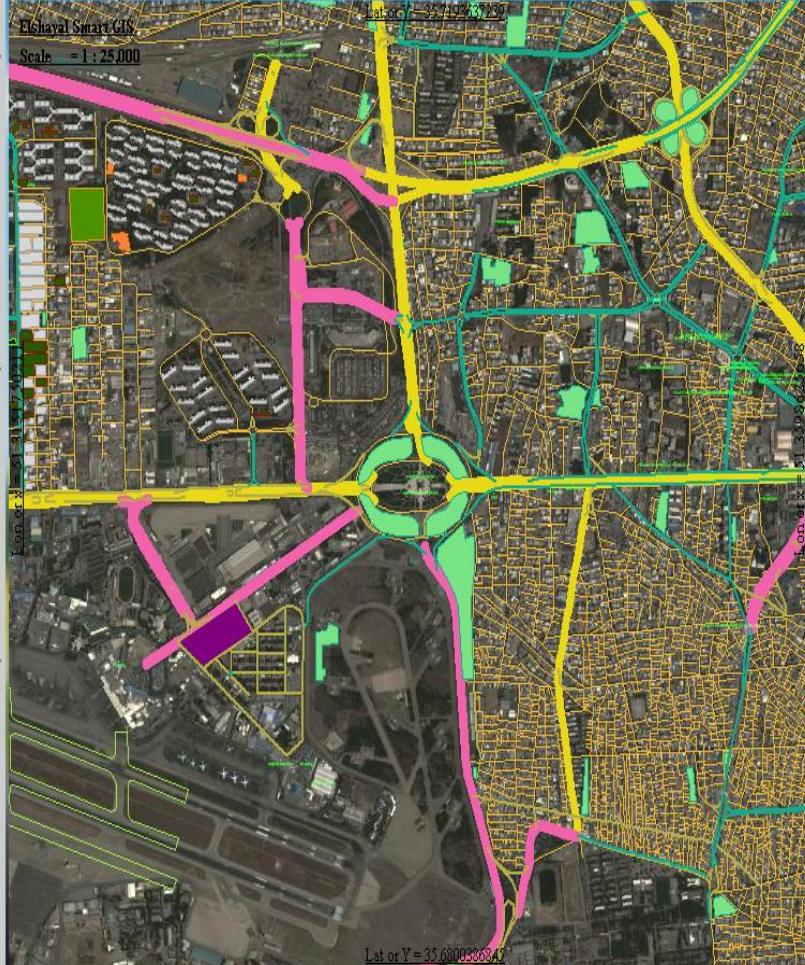
**Goto Coordinates**

Lon 51.337518793491

Lat 35.699701204200

Scale 25000

Image = ..\Temp\tmp3.png



## CGI Input Html File

# Elshayal Smart GIS Map Editor and Surface Analysis

## The First Arabian GIS software

Zoom In | Zoom Out | Pan | [Elshayal Smart GIS Map]

**Mnue Search**

LayerNo [mnuLayerNo]  
FieldNo [mnuFieldNo]  
Relation [mnuRelation]  
FieldValue [FieldValue]  
Scale 0

**Value Search**

LayerNo [LayerNo]  
FieldNo [FieldNo]  
Relation [Relation]  
FieldValue [FieldValue]  
Scale 0

**Goto Coordinates**

Lon [MapXCenter]  
Lat [MapYCenter]  
Scale [Scale]  
  
Image = [MapImageSrc]

### Third: Mobile GPS Web browser for Tracking Mobile GPS



## Used Components



# Used Technologies

## Server Side

**Windows Server IIS 5, 6, 7, 8, or 10**

**CGI supported Server**

**GPS users locations Data Base CGI Engine**

**GIS Shape file to KML CGI Engine**

**Google Maps – free web mapping provided by Google**

**GIS Shape files (Spatial and attribute data) of requested area**

**Search tools for both (Google Geo-coding and KML GIS Shape files )**

## Client Side

**Client HTML5 supported Browser**

**Client Java Script supported Browser**

**HTML and Java Script Designed web site**

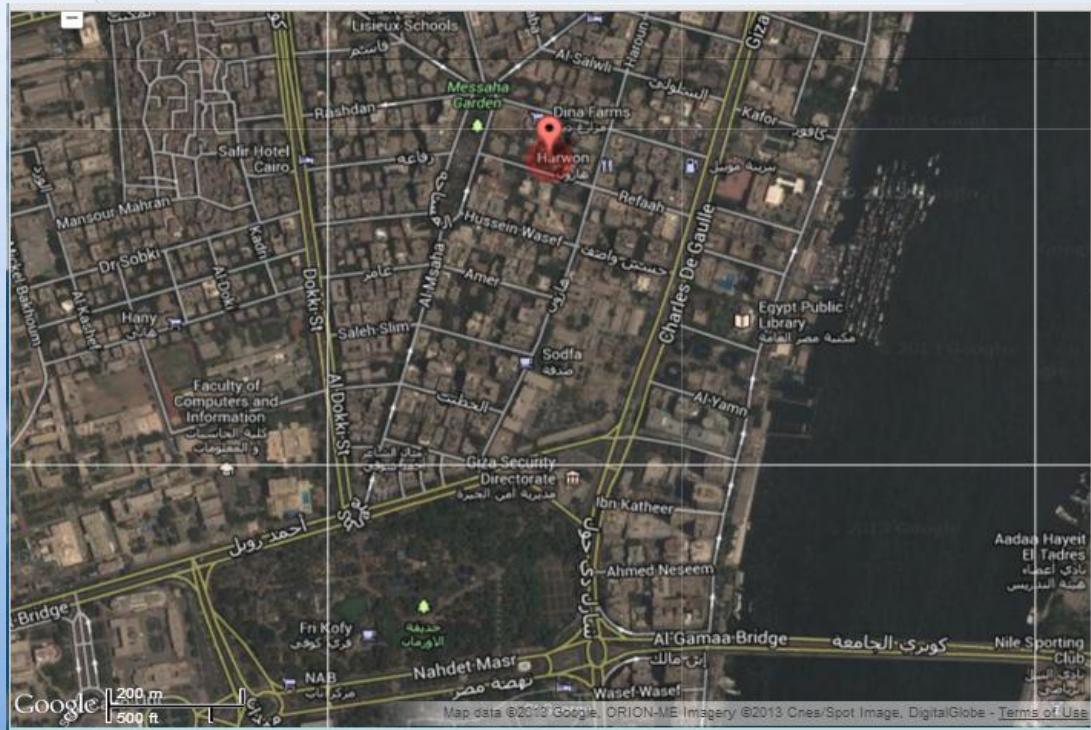
**The cost is minimal and it is represented by the cost of**

**Mobile GPS devices (Android, iPhone, IPad, etc.)**

**High bandwidth Server with Windows IIS on it**

**Good internet Connections**

## Real Time Tracking and Following other devices Locations



Goto Location

Accuracy: 166000 m

Speed: 0.00 Km/h

Elevat: 0 m

Lon: 31.2088530

Lat: 30.0130560

Goto Address

### GPS Tracking Friends

Melshayal

Sun Jul 28 2013  
12:02:11

Remove

Acc: 27 Speed: 0.00 Km/h Elev: 0

Lon: 31.2155977 Lat: 30.0353785

## Real Time Tracking Report

Tracks limited Report

Main Report

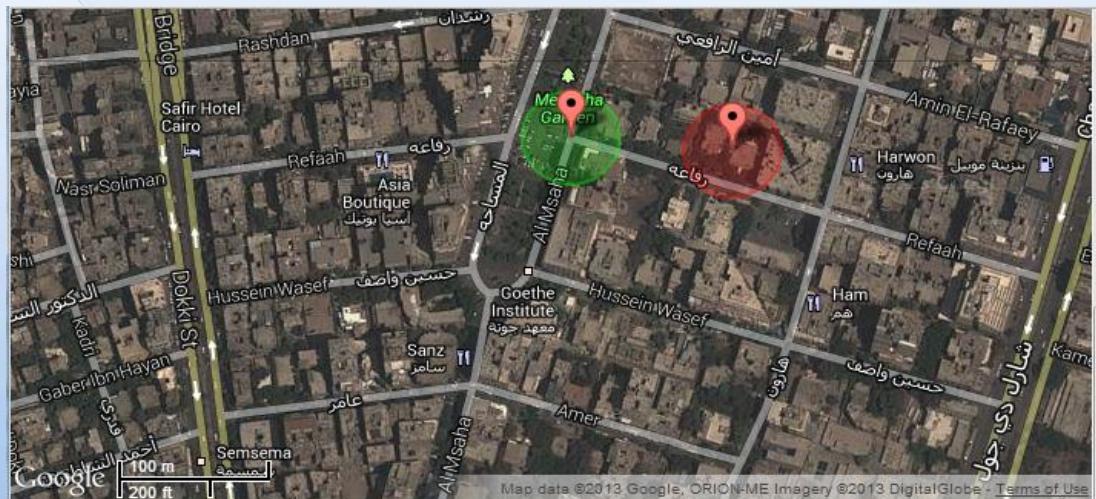
**TrackID Limited Report** 4

**Vehicle ID: 1002**      **DriverID: 101**

Date	Latitude	Longitude	Speed
8/25/2003 6:45:49 PM	3,326,299.133	326,854.361	21
8/25/2003 6:47:06 PM	3,326,907.341	327,303.679	36
8/25/2003 6:47:10 PM	3,326,936.357	327,340.932	42
8/25/2003 6:48:20 PM	3,327,049.165	328,007.446	19
8/25/2003 6:48:27 PM	3,327,032.003	328,040.772	32
8/25/2003 6:48:45 PM	3,326,830.315	328,082.326	38
8/25/2003 6:48:55 PM	3,326,748.942	328,111.115	28
8/25/2003 6:50:07 PM	3,326,548.228	328,196.062	14
8/25/2003 6:51:37 PM	3,325,553.137	328,321.966	44
8/25/2003 9:24:56 PM	3,327,515.554	332,224.961	71
8/25/2003 9:25:24 PM	3,327,706.781	332,661.125	59
8/25/2003 9:25:30 PM	3,327,756.025	332,739.495	57
8/25/2003 9:25:54 PM	3,327,971.269	333,117.719	78
8/25/2003 9:26:16 PM	3,328,325.563	333,492.007	83
8/25/2003 9:26:41 PM	3,328,592.449	333,888.651	57
8/25/2003 9:26:52 PM	3,328,670.452	334,035.888	58

Current Page No.: 1      Total Page No.: 1+      Zoom Factor: 100%

## Real Time Chatting with Other Devices



[Goto Location](#)

Accuracy: **166000 m**

Speed: **0.00 Km/h**

Elevat: **0 m**

Lon: **31.2088530**

Lat: **30.0130560**

[Goto Address](#)

**5 Refaah street doki giza Egypt**

### GPS Tracking Friends

Melshayal

Sun Jul 28 2013

[Remove](#)

13:00:59

Acc: **28** Speed: **0.00 Km/h** Elev: **0**

Lon: **31.2156212** Lat: **30.0353849**

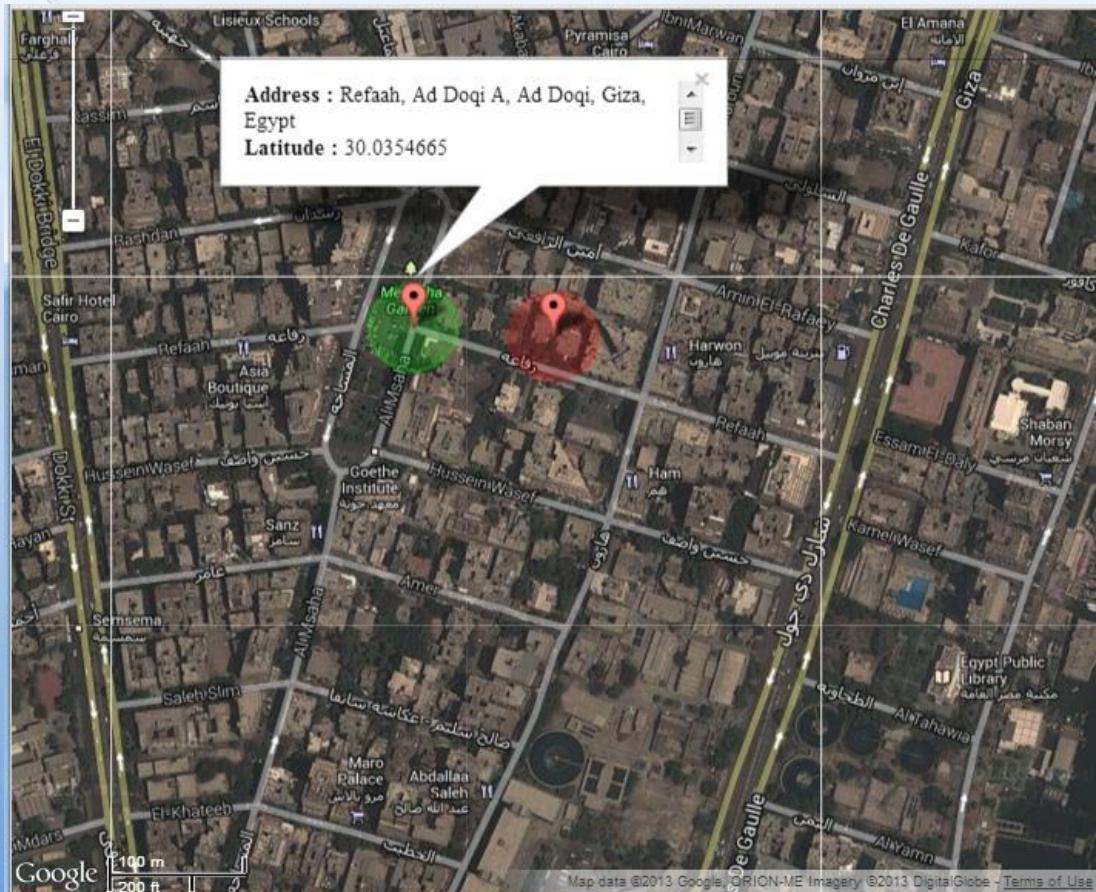
Melshayal: Example chat line 4

Me: Example chat line 3

Melshayal: Example chat line 2

Waiting for mt0.googleapis.com...

## Google Map Geo-Coding Go to address



Goto Location

Speed: 0.00 Km/h

Lon: 31.2088530

Accuracy: 166000 m

Elevat: 0 m

Lat: 30.0130560

Goto Address

Refaah doki giza Egypt

Thank You

Thank You !

<http://FreeSmartGIS.blogspot.com/>