

# Role of GIS as an Asset Management Tool



**MAHANAGAR  
GAS**

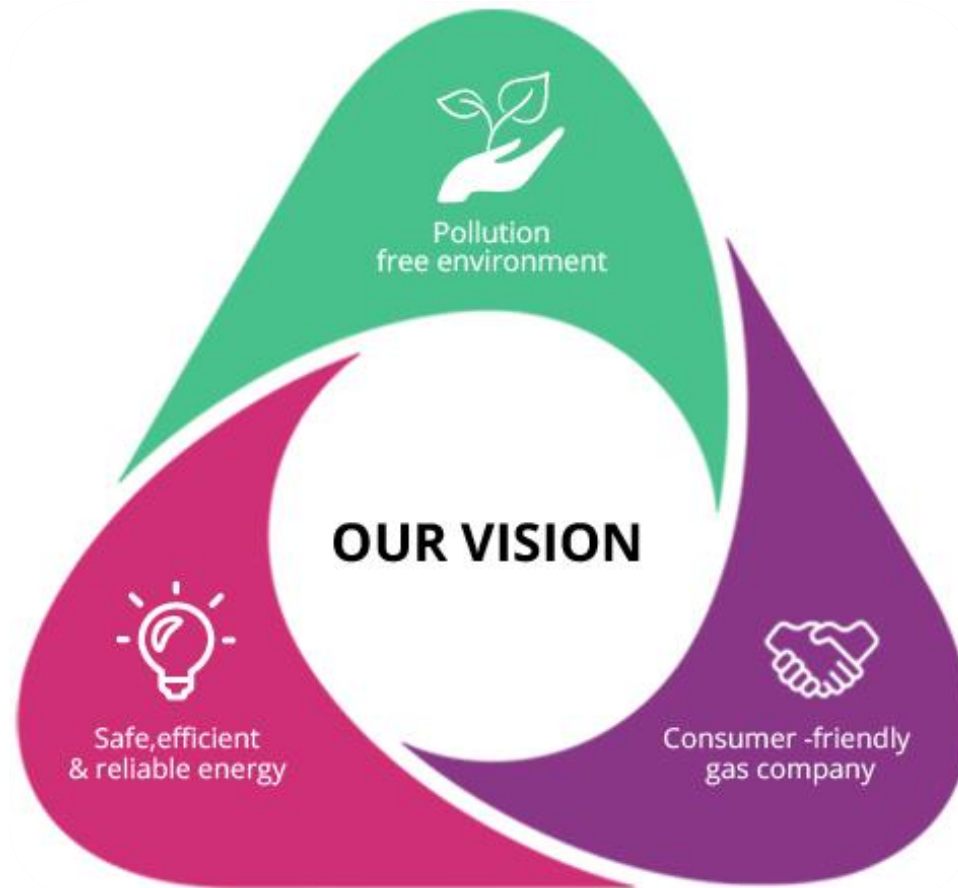
# M G L – an overview....

1. Mahanagar Gas Limited (MGL) is a leading Natural Gas Distribution company in India, currently operating in the metropolis of Mumbai & neighboring areas.
2. MGL has successfully completed more than 25 years of its operations.
3. MGL has laid down a network of over 6000 Km of Steel MDPE pipeline network covering a domestic potential of about 18 lakh customers.
4. ISO 9001, 14001 & 45001 Certified.



# MGL VISION....

1. To be a World Class, Consumer & Environment Friendly, Employer of Choice; committed to provide Safe, Efficient and Reliable energy; while creating Value for all our Stakeholders.

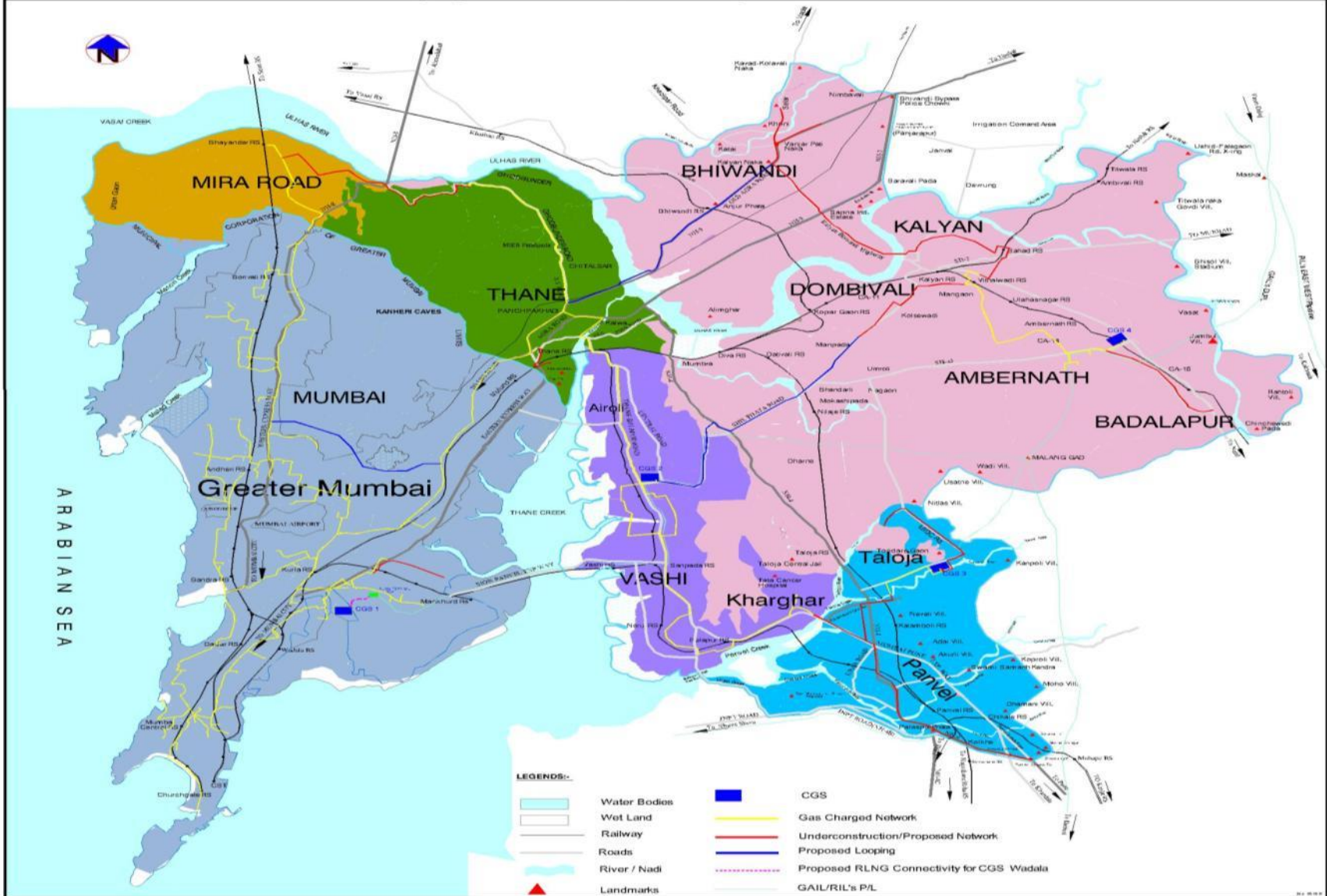


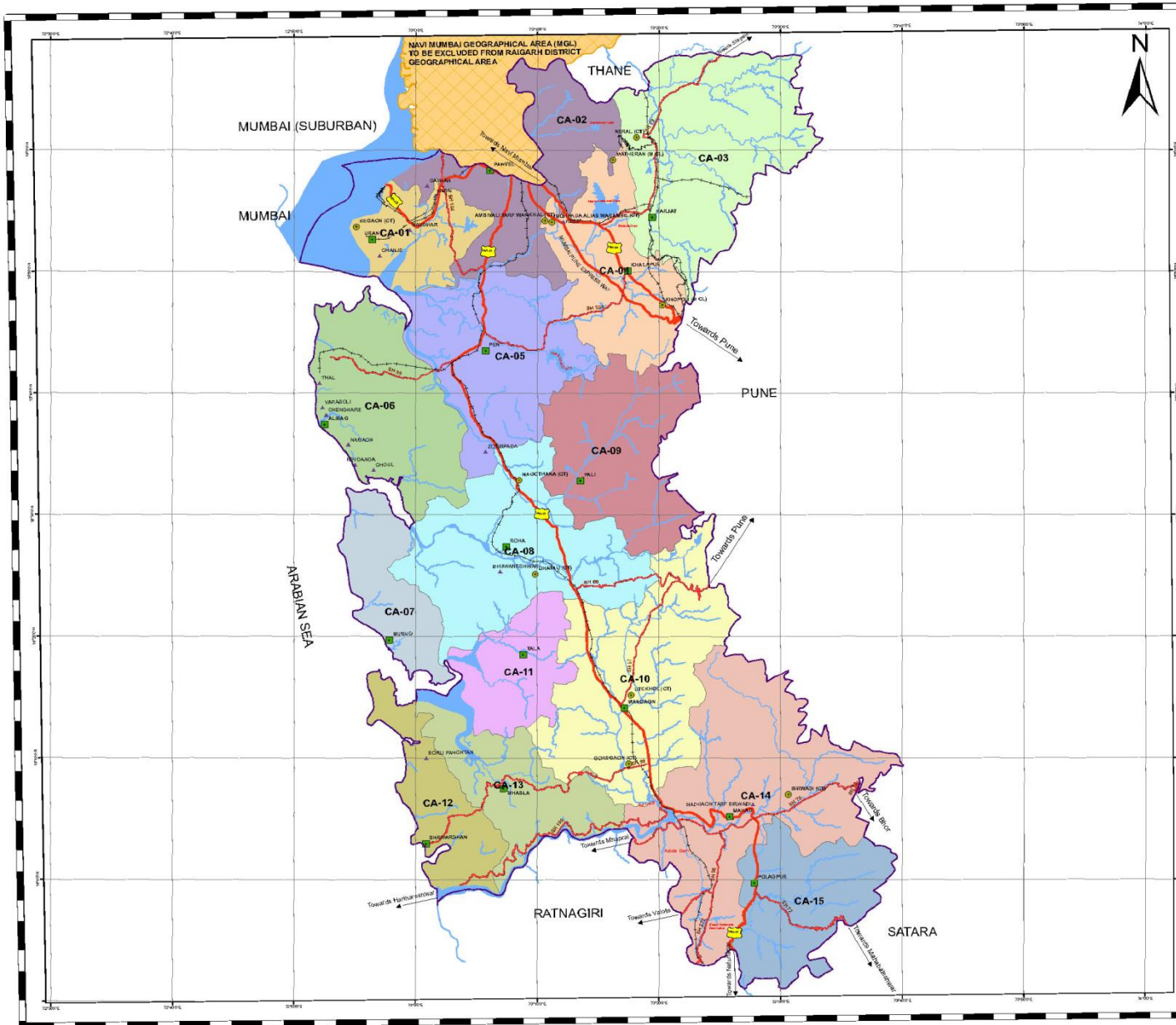


# MAHANAGAR GAS LIMITED

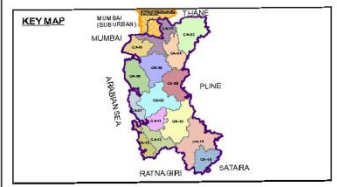
A Joint Venture of GAIL (India) Ltd. BG Group (U.K.) & Govt. of Maharashtra

Authorised Geographical Areas, Steel Pipeline Networks and CGSs





**RAIGARH DISTRICT GEOGRAPHICAL AREA (MAHARASHTRA)**



Total Population within the Geographical Area as per Census 2011  
 Total Geographical Area (Sq. Km) 22.6 (incl. Water) % of Charge Area 15

Charge Area Identification	Use	Trunk Name
CA-01	Urban	
CA-02	Port/Industrial	
CA-03	Rural	
CA-04	Port/Industrial	
CA-05	Rural	
CA-06	Agriculture	
CA-07	Rural	
CA-08	Rural	
CA-09	Port/Industrial	
CA-10	Port/Industrial	
CA-11	Rural	
CA-12	Port/Industrial	
CA-13	Port/Industrial	
CA-14	Port/Industrial	
CA-15	Port/Industrial	

**LEGEND**

**LANDMARKS**

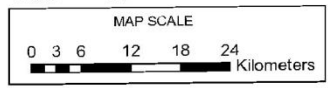
- TALUKA HEAD QUARTER
- MAJOR TOWNS

**VECTORS**

- NATIONAL HIGHWAYS
- STATE HIGHWAYS
- RAILWAYS
- GA BOUNDARY
- WATER BODIES
- NAVI MUMBAI GEOGRAPHICAL AREA (MGL) TO BE EXCLUDED FROM RAIGARH DISTRICT GEOGRAPHICAL AREA
- VILLAGE WITH POPULATION 5000 AND ABOVE

**REMARKS:-**

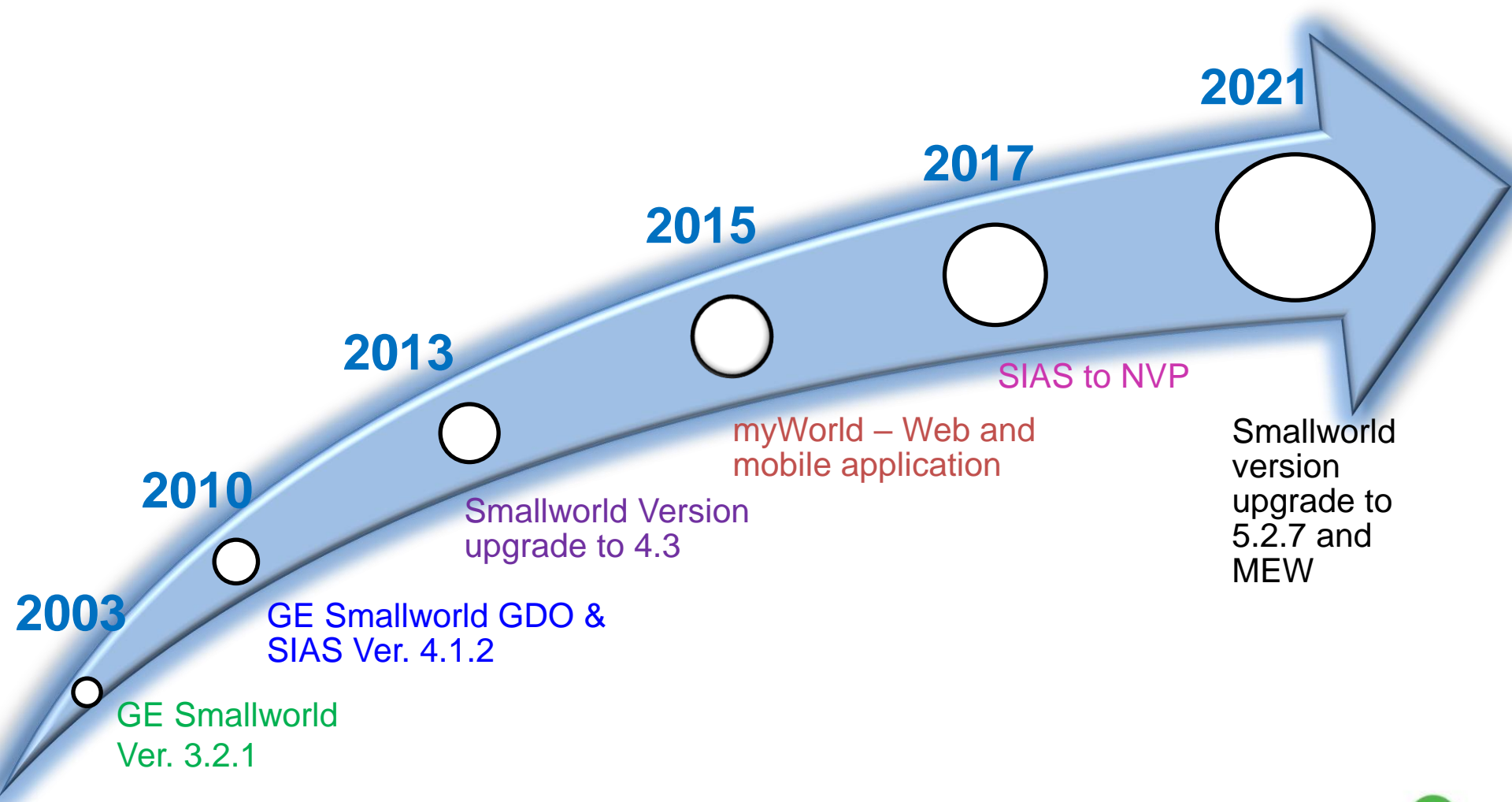
- Landmarks are indicative in nature.
- Each charge area is depicted in different color and is enclosed by physical features such as roads, rivers, railway tracks or administrative boundaries as shown in the map.
- This map is a part of application-cum-bid document for the Raigarh District Geographical area.



**PETROLEUM AND NATURAL GAS REGULATORY BOARD**  
 1st Floor, World Trade Centre, Babel Road, New Delhi-110021

Map No.	PNGRB/CGD/2014/2013/CA-Raigarh District
Date	September-2013
Map Title	Raigarh District Geographical Area

# GIS Journey at MGL



# Progress so far...

1. To minimise latency of the network availability in GIS after laying, porting from backfilling report is initiated.
2. GIS Operators deployed at different construction offices for speedy porting of MGL network into GIS.
3. Capturing High pressure network through DGPS.
4. Domestic Customer information integrated with GIS.
5. PIMS related features mapping in GIS.
6. Web and Mobile application user base increased.

# Gas Distribution Network in GIS



City Gate Station

19 Bar Steel

Network



CNG Station



DRS/MRS

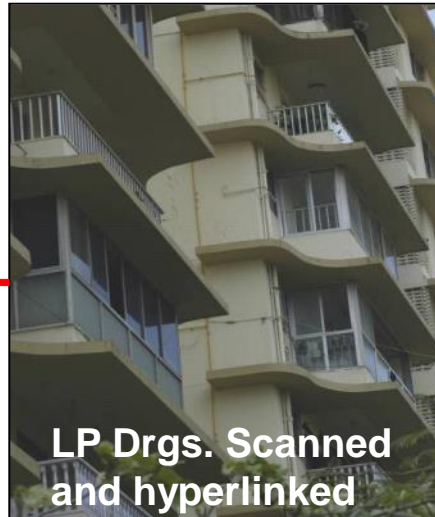
4 Bar PE  
Network



Customer  
information in GIS

Domestic Kitchen

21 mbar  
CU  
Network



LP Drgs. Scanned  
and hyperlinked

LP & GI Installation

100 mbar  
PE  
Network



Service Regulator

# GIS Core application – GE Smallworld

Gas Distribution Office

File Edit View Trail Tools Applications Window Help

Search Text Street Name [Select All]

1:570 Very Close World Utm Zone43n (No Background Map) 100% None

One Call Analysis Route Manager Hydraulic Analysis  
Object Control Find Address Leak Analysis Network Trace

Very Close

Gas\_distribution (Smallworld Datasore)  
Mains & Services  
Control Devices  
Fittings  
Catalogs  
Non-Fitting Features  
Compliance  
Catholic Protection  
Regulating Stations  
Customer Related Features  
System  
Drafting  
Miscellaneous  
Land (Smallworld Datasore)  
Short (Smallworld Datasore)  
Monolith (Smallworld Datasore)  
Organisational\_hierarchy (Smallworld Datasore)  
externaldatabase (External Datasore)  
Gis (Smallworld Datasore)

Datasets Themes

Object View  
Distribution Pipe Geographic 1:1000

Editor  
Recent Configurations

Fields Object Relationships  
[Gas\_distribution] Distribution Pipe

Field name	Value
ID	231214
Status	Existing
Pressure	Medium
Outside Diameter	63
Nominal Diameter	2.25
Inside Diameter	51.54
Manufacturer	Unknown
Top Cover	1.000
Route	✓
Material	PE - 10E50 - BS5252
Calculated Length	2.300 m
Book Length	629.0
Weld Joint Numbers	
Year of Construction	2009

Click to select geometry or drag to pan

Distribution Pipe Existing Medium Pressure Route (2 geometries hit)

Centre: 217795.956, 2114276.635 m

3:19 PM  
7/19/2017

# GIS Web application - GE MEW

GDO Network Viewer Mahanaga x +

webgis.mahanagargas.com:30443/network\_viewer/index.html#/map/19.234991,72.976654,19z

Apps myWorld Login MEW-Mobile Enter... Protea Infotech | At... Login Page ARS ESS login MGL Intranet SuccessFactors Log... Other bookmarks Reading list

GDO Network Viewer powered by GE Login time : 08/02/2022 13:24:45 kulkarni.viraj

CNG Station, 214307, Laxmi Automot

**CNG Station**

Id	214307
Name	Laxmi Automobiles, Manpada
Type	Online
Compression	1200 SCMH
Capacity	

Gas Outage Manager

Starting point

gdo(valve\_trace)

Steel trace  PE trace

Max Distance kilometer

Clear Run

Note: Select distribution pipe object only

Length(Steel) Steel Trace Length(PE) PE Trace

Summary of Results

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# GIS Web & Mobile application (myWorld)



sat rasta mum

Places powered by Google

- Saat Rasta, RTO Colony, Mumbai, M...
- Saat Rasta, Arthur Road, Jacob Circl...
- Saat Rasta Optician, Mumbai, Mahar...

- Gas Medium Pressure Pipe
- Gas Stations
- Gas Service Regulator
- Gas High Pressure Valve
- Gas Medium Pressure Valve
- Gas Valve Chamber
- Gas Fittings
- Gas Drs Boundary
- Gas Drafting Objects
- Gas Others
- Land Building
- Land Road
- Land Others
- Notes

Mahaaxmi Railway Station

50 m  
100 ft

Google

MAHANAGAR GAS

Google  
Google Hybrid  
Google Sat  
None

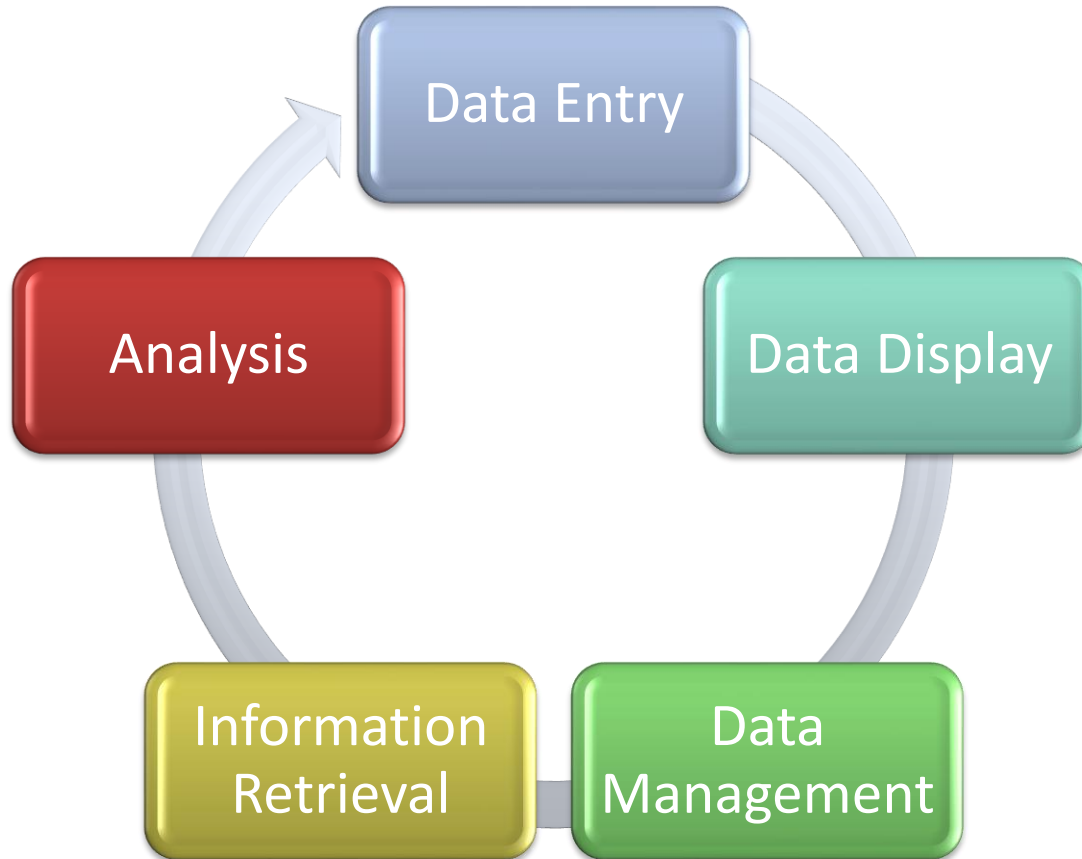
Leaflet

Map showing an aerial view of a city area with various gas infrastructure elements overlaid. The map includes a search bar at the top left, a toolbar with navigation icons, a left sidebar with a 'Places' section and a list of gas infrastructure categories, and a right sidebar with map style options. The map itself shows a central roundabout with several roads radiating outwards. Buildings are highlighted in yellow and blue, and various gas infrastructure elements like pipes, valves, and regulators are marked with colored icons and labels. A scale bar at the bottom left indicates 50 meters and 100 feet. The Google logo is visible in the bottom left corner of the map area.

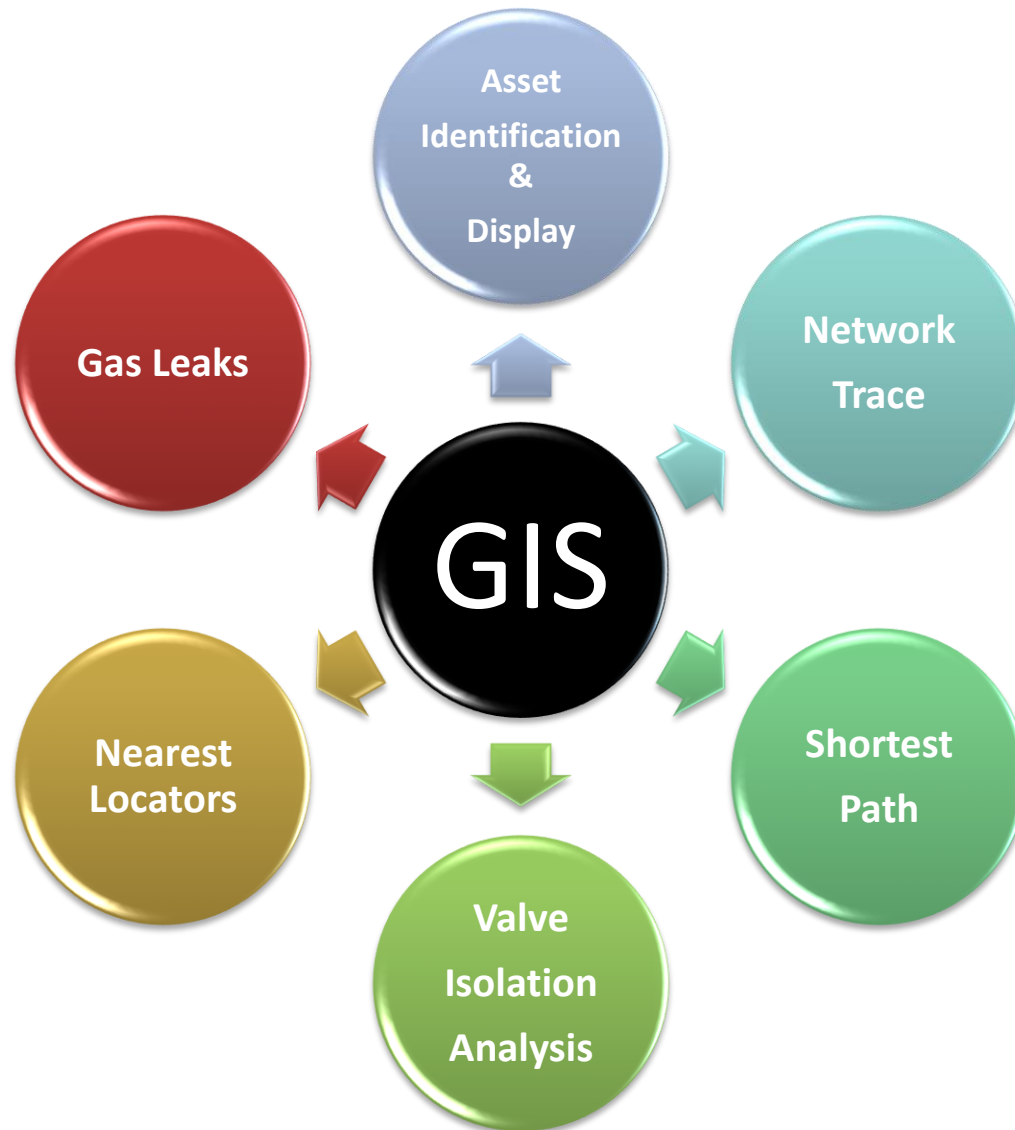
[Standard] 1545 logout

Built by Ubisense

# Functioning of GIS



# GIS in MGL – Key functionalities.....



# Tasks managed in GIS .....

- **Network information:**
  - Availability of all hard copy drawings,
  - Quality & condition of drawings,
  - Extent of details & Accuracy,
  - Obsolescence.
- **What can help:**
  - A standardized drawings process,
  - Minimal lag between laying & drawing,
  - Active monitoring,
  - Scanning of all drawings,
  - Appropriate archival,
  - GIS Centric approach.

# Tasks managed in GIS .....

- **Landbase :**
  - Currency & Accuracy,
  - Different vendors,
  - Obsolescence.
- **What can help:**
  - A standardized scope for vendor.
  - Accuracy check – DGPS surveys.
  - Realistic update intervals.
  - AMC to Upkeep.
  - Accuracy checks from time to time.

# Tasks managed in GIS .....

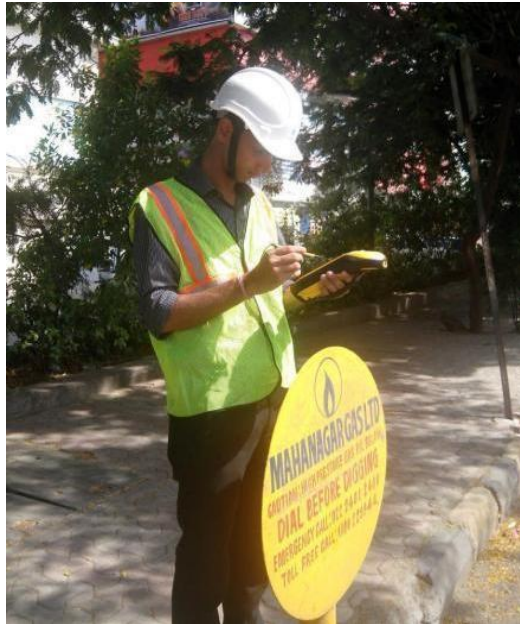
- **Usage & Utilization:**
  - Lack of Awareness,
  - System ease, appeal & friendliness,
  - Reliability of information,
  - Availability of useful functionalities,
  - Other constraints.
- **What can help:**
  - Thorough training & refreshers from time to time,
  - Best quality network information,
  - User feedback surveys & quiz competitions,
  - Continuous improvements,
  - Usage Monitoring.

# Key Lessons learnt

- **System, Vendors, Technology, Resources:**
  - Selection of Suitable Vendors,
  - Selection of Suitable Solution,
  - Adequate resourcing in terms of IT resources,
  - Adequate trainings for GIS Core-team,
  - AMCs & Upkeep,
  - GIS porting operators,
  - Mobile Solutions,
  - GPS positioning accuracy.

# New GIS Initiatives in MGL

## 1. DGPS based network data capturing (*high accuracy latitude, longitude recordings*).

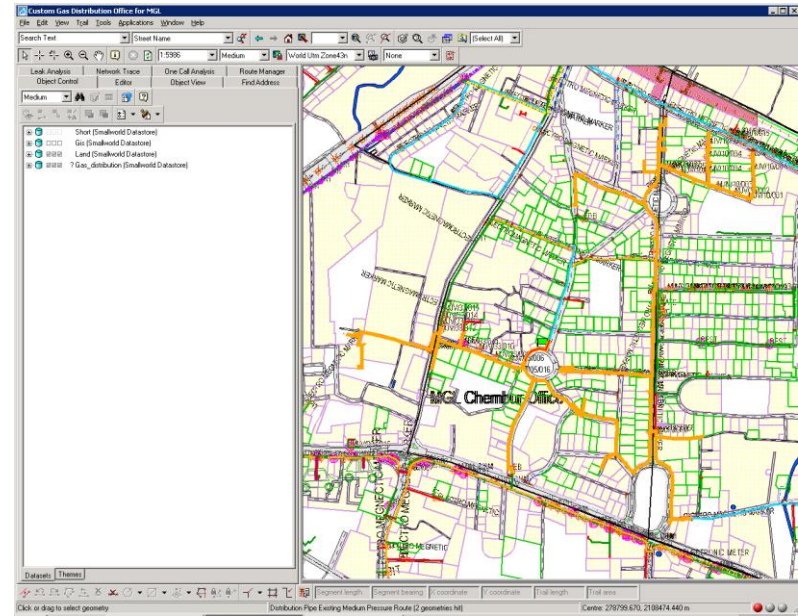
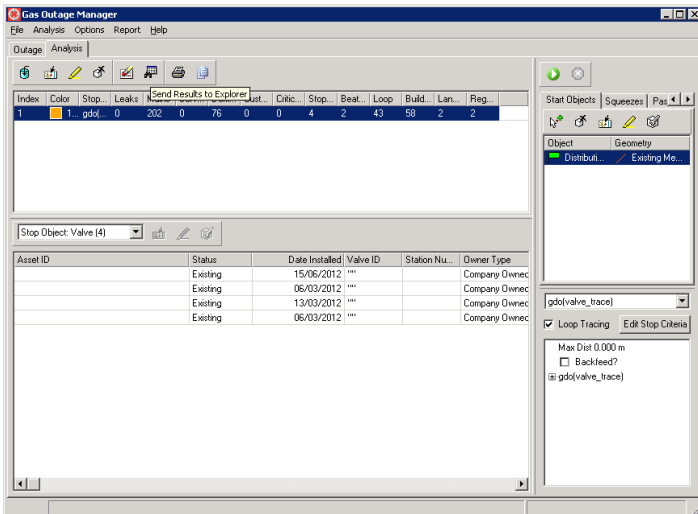


## 2. Mobile GIS application available for users on the field with mobile phones and tabs.

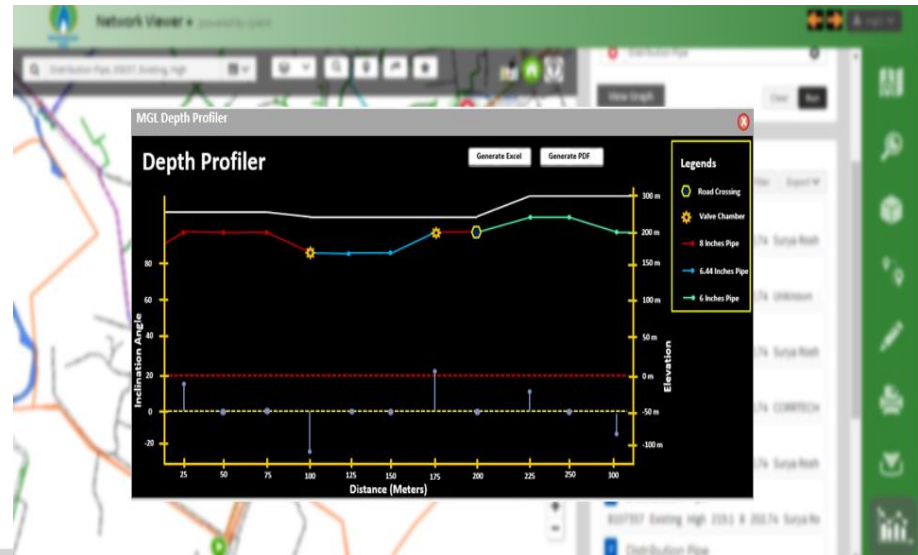


# New GIS Initiatives in MGL

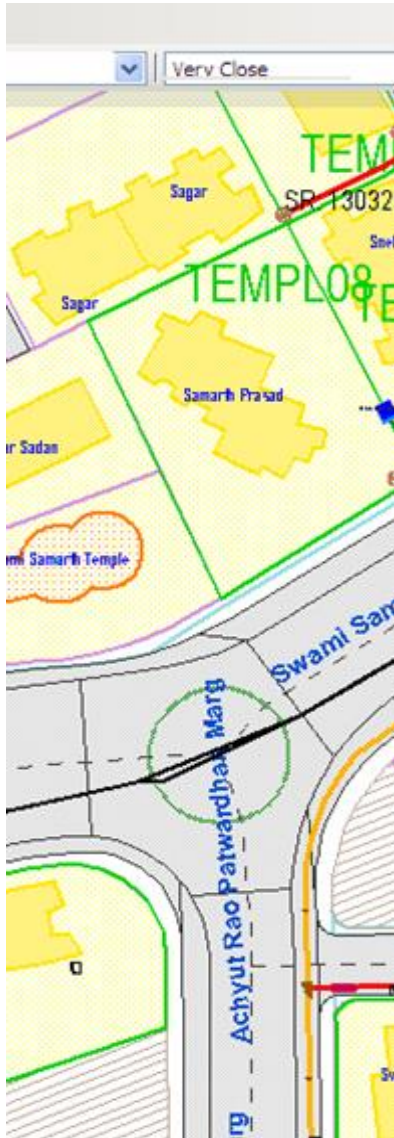
## 3. Outage Manager tool for O&M through GIS Web application.



## 4. Profile Viewer tool to view pipeline depth profile.



# Advantages for a CGD



Viewing Entire Network on a single Platform



Minimizing Hard copy Maps.



Network planning – Existing V/s New lines



Construction Planning – Where to lay



Marketing Activities – Focus on select locations



Maintenance – Preventive / Emergency



Applying useful functionalities

*Thank You...*



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