



VideoMap® Technology AND Geospatial APIs

18th-Mar-2016

@ Vellore Institute of Technology, Vellore, Tamil Nadu

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VidTeq India Pvt. Ltd.

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Head of Product & Business Development
VidTeq India Pvt. Ltd.

Overview

1. Introduction
2. Company Profile
3. VideoMap® Technology by Navada
4. Geospatial APIs by Bhaskar
5. Future Prospects
6. What's Next

Company Profile



Strong Foundation

Founded in 2008, VidTeq is a Technology and Product company. We provide **products and services to consumers, businesses and corporate** in Navigation, Mapping, Location and Local Search.

World's First & Only VideoMap® Provider

With our patented VideoMap® technology we are the **pioneers** in providing **Geospatial products** and services to **real estate sector in India**. We are honored to be well recognized as World's first **Video Directions based Map providers** (VideoMap®).

Latest & Greatest

Our Uniqueness lies in providing most recent & accurate information, precise geographic locations and vivid visualizations with complete customizations to provide a unique blend with your brand. We integrate all of it with our own Maps to ensure that the map is always up-to-date with the ground reality.

Spread across 20+ cities in India

Currently providing VideoMap® in significant cities like **Bangalore, Mysore, Hyderabad, Pune, Mumbai, Goa, Kochi, Mangalore, Chennai, Manipal, Vijayawada, Coimbatore, Visakhapatnam** etc.; we are expanding the reach of our video map to other major cities at constant rate.

Our Vision is to be the Leaders in VideoMap®



Introduction to VideoMap® & Geospatial APIs





Dhanvanthari Road

Seshadri Road

EMAIL SMS PRINT LINK
00:00:52/00:17:45

Directions From Majestic to Phoenix Market City
Total Distance = 20.65 Kms (12.83 Miles) Video Time ~ 00:17:45

START 1. Get onto KSRTC Bus Station. Go for 220 Meters.

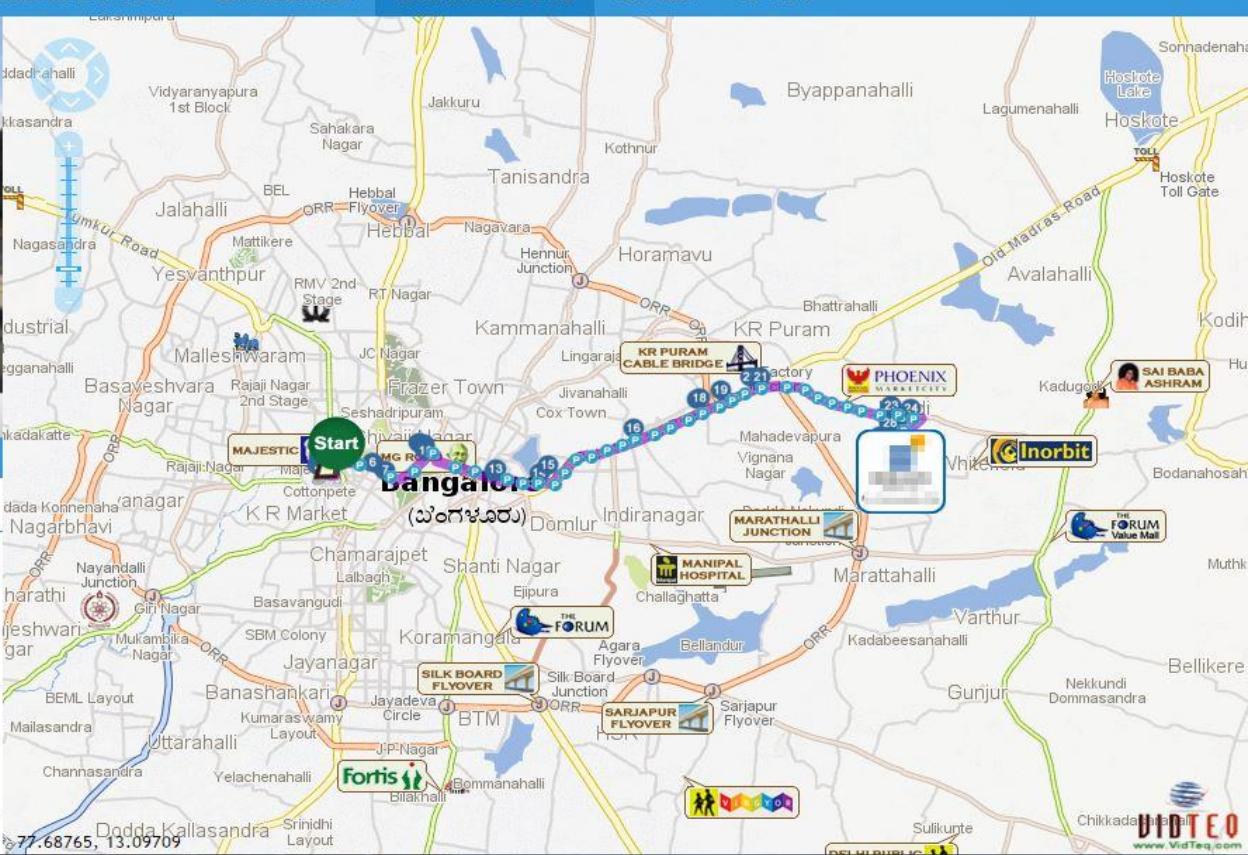
2. Take Right onto Gubbi Thotadappa Road. Go for 240 Meters.
Pass by Bangalore City Railway Station Bus Stop

3. Take slight Right onto Seshadri Road. Go for 180 Meters.
Pass by Hotel Kaveri, National Residency

4. Bear to the right and continue on Seshadri Road. Go for 250 Meters.
Pass by Hotel Suprabhata, (2 more ...), Pioneer Enterprises

Bear to the right and continue on Seshadri Road. Go for 1.13 Kms.
5. *Pass by Maharaja Hotel, (10 more ...), Fire Control Room And High Grounds Fire Station*

Bear to the right and continue on Seshadri Road. Go for 430 Meters.



Give Your Project The Directions It Deserves

With the list of distinctive features like Video Directions with Map, On Route Point of Interest Information and Last Mile (Video Directions from selected locations to/from Project) from anywhere to/from your property provides greater insight about location of the project, surroundings and connectivity. Other Feature includes What's nearby, 3D, 360 degree View, Sky View, Landmarks routes with options to add-ons*.



Sky View

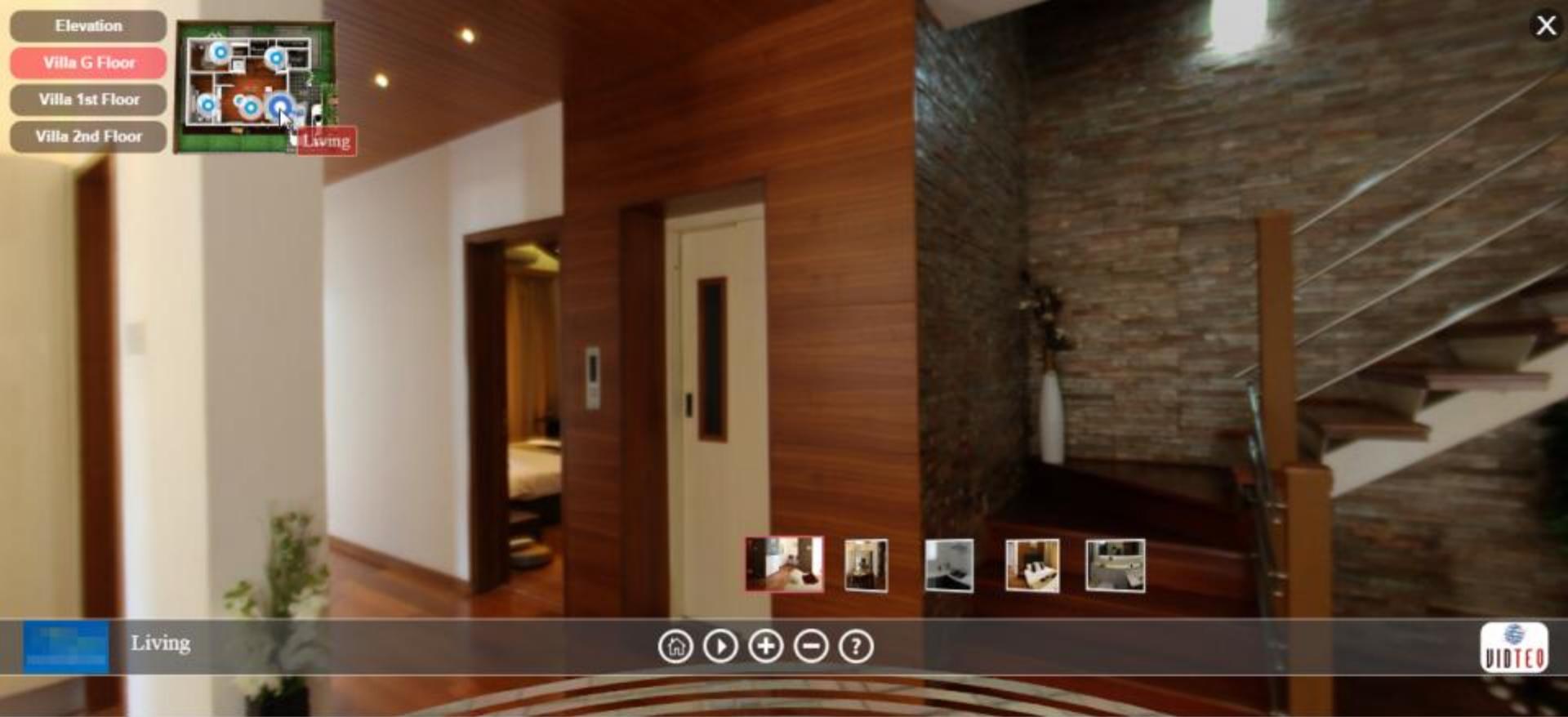
Interactive Aerial Panoramic Virtual Tour

Provide an experience to home buyers to view the property interior and/or exterior in 360 degree from 100Ft up-to 350Ft from base of the building to the horizon from the ground.

**** 100 to 350 Ft from Ground Level**

[Elevation](#)[Villa G Floor](#)[Villa 1st Floor](#)[Villa 2nd Floor](#)

Living



360 Panoramic View

Interactive Panoramic Virtual Tour

Provide an experience to home buyers to view the property interior and/or exterior in 360 degree from the base of the building to the horizon from the ground.

**** Model Flat, Construction Status**



EXPLORE



VIDTEQ



3D Neighbourhood

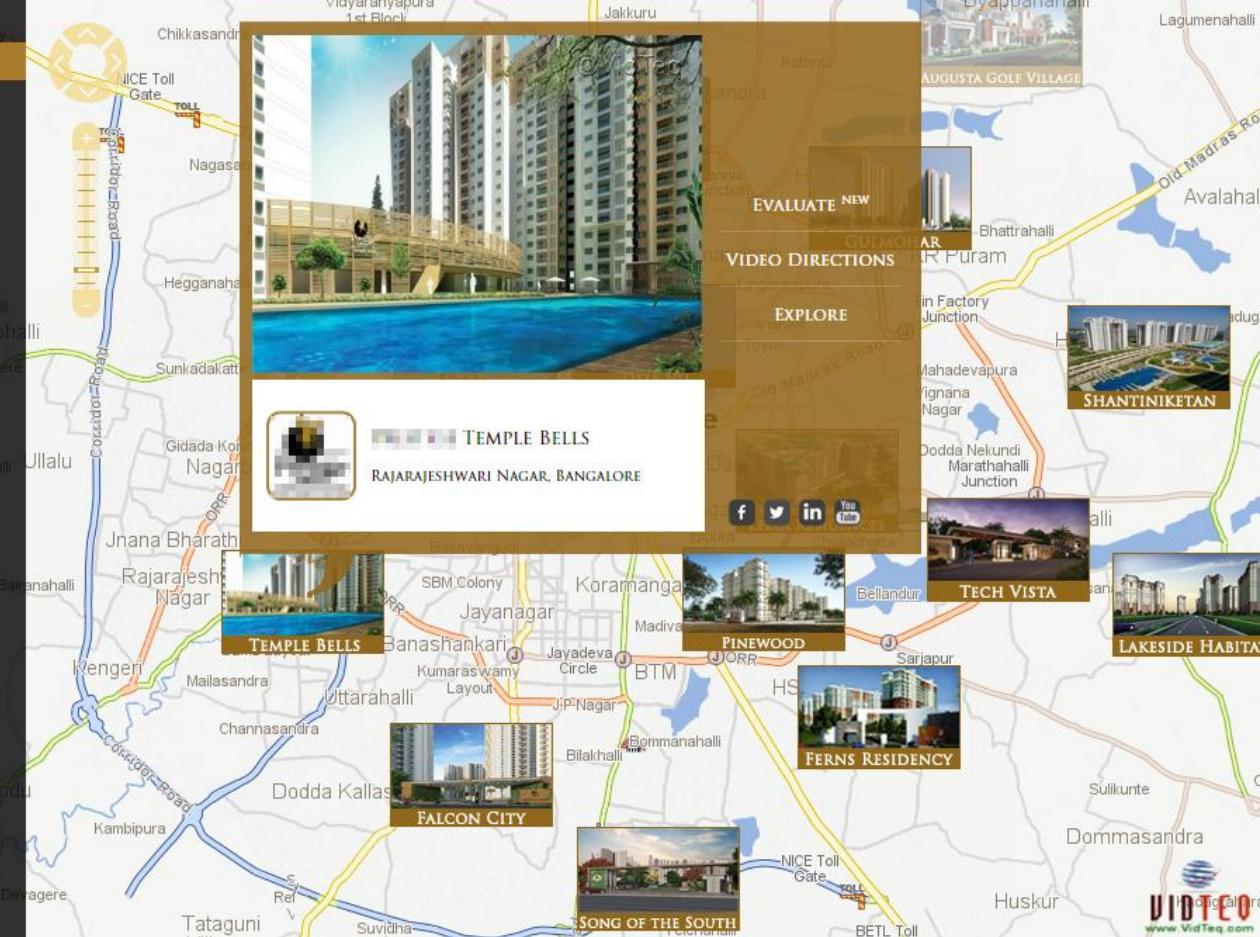
3D Exploration & Visualization

3D Visualization for property and nearby in the latest browsers.



PROJECTS

SONG OF THE SOUTH	JUST LAUNCHED
BOUGAINVILLEA INDULGE	
BOUGAINVILLEA PLATINUM	
MSR	
NORTH POINT	
PINE WOOD	
WOODLAND PARK	
WOODSIDE	
FALCON CITY	
LEELA RESIDENCES	
DEJA VU	
GULMOHAR	
TEMPLE BELLS	
KENILWORTH	
SUNRISE PARK	
WEST WOODS	
LAKESIDE HABITAT	
JADE PAVILION	



Map View

All Projects In Multi City With Unique Features

Video Directions with Map, On Route Point of Interest Information from anywhere to/from your property provides greater insight about location of the project, surroundings and connectivity.

○ Geospatial Evaluations

○ Video Directions

○ Explore

○ 3D-360

○ All Project Listings

○ Multiple City View

○ Search Page

○ 360 Panoramas

BACK

Tip

Click on a section to explore more

X

CLOSE X

Leela Residences

Prestige Group

9 - 10 Floors

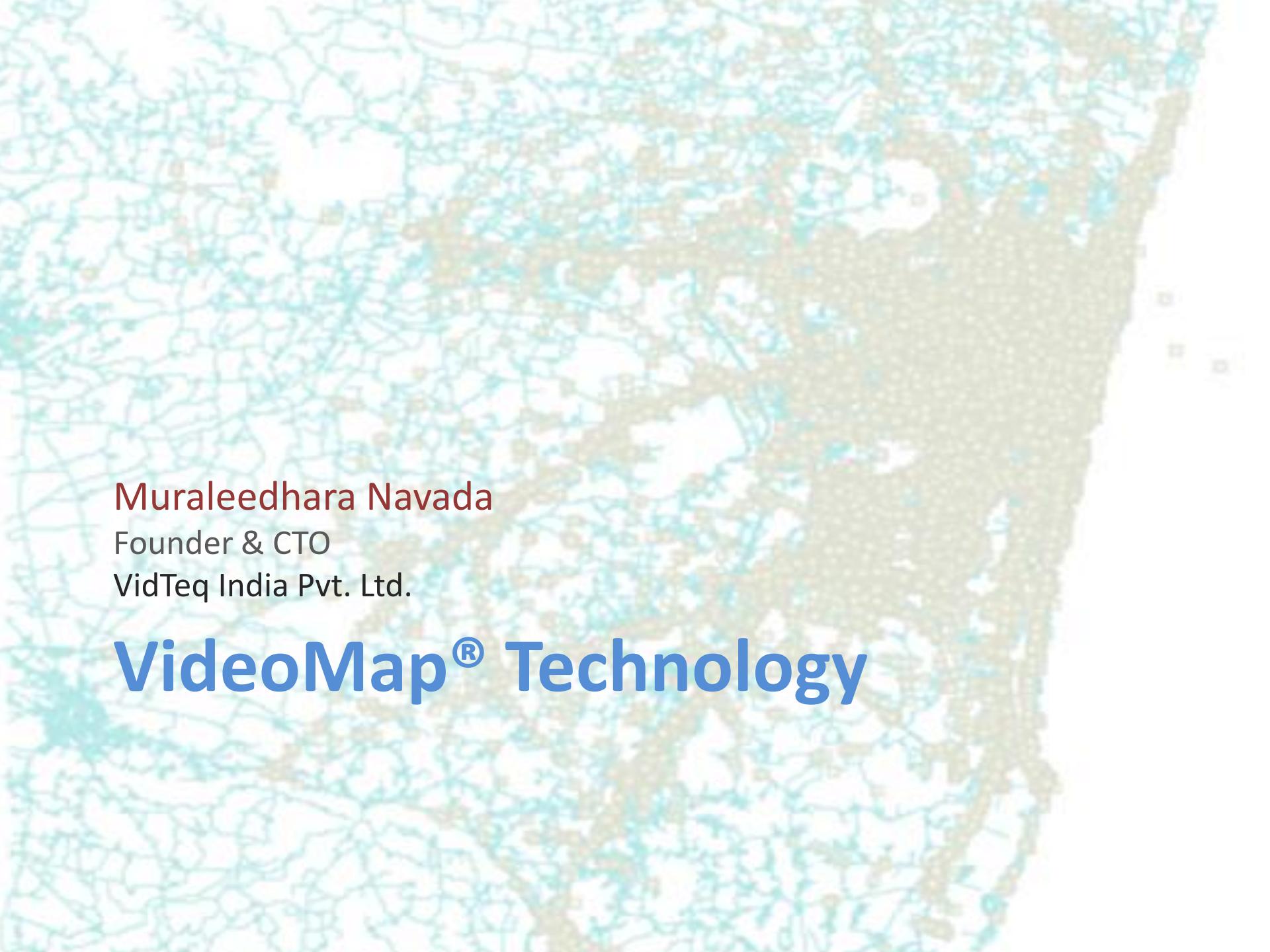
2 - 8 Floors

Ground & 1st Floors



Real View

Unique Online Reservation Experience!



Muraleedhara Navada
Founder & CTO
VidTeq India Pvt. Ltd.

VideoMap® Technology

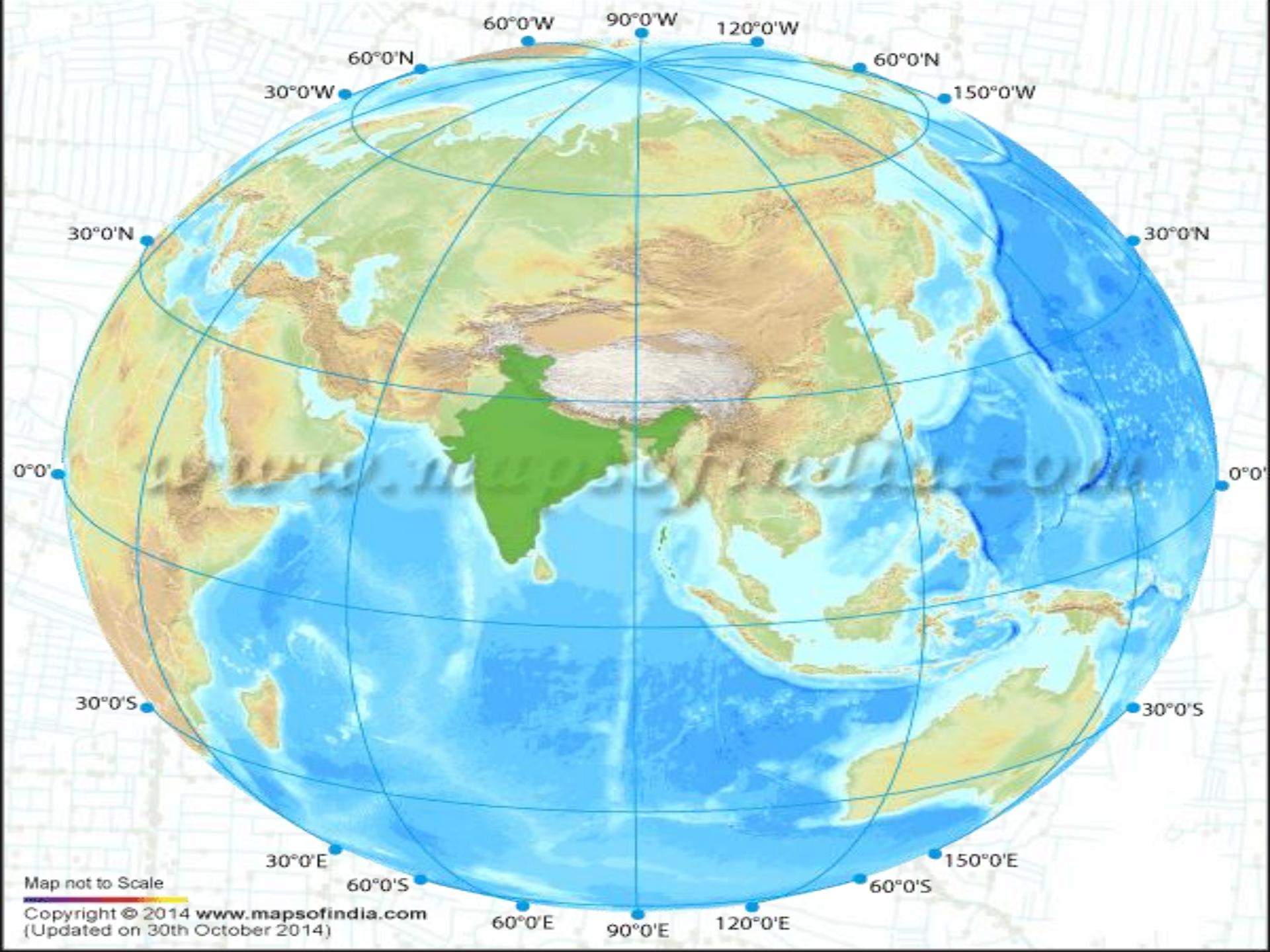
VideoMap® Technology

Skills you will be able to demonstrate after this section:

1. Understand GIS Fundamentals & Concepts
2. How to store geospatial data in database, use-case with PostgreSQL PostGIS
3. Routing for Directions
4. How Video Route is created
5. Breaking through technical challenges
6. Workflow pipeline that enables seamless Video Routing
7. Technology Stack for VideoMap®

What are Maps

- Representation of objects in space as model
- An explorer communicates to new explorer
- Used to go to new places
- May be visual, thematic, atlas
- Photo graphs, video graphs or panoramas
- Fantasy maps
- Political, physical, resource maps



Map not to Scale

Copyright © 2014 www.mapsofindia.com
(Updated on 30th October 2014)





Bengaluru, Karnataka 560001



Sign in

Bengaluru, Karnataka 560001

Partly Cloudy · 32°C
9:36 PM

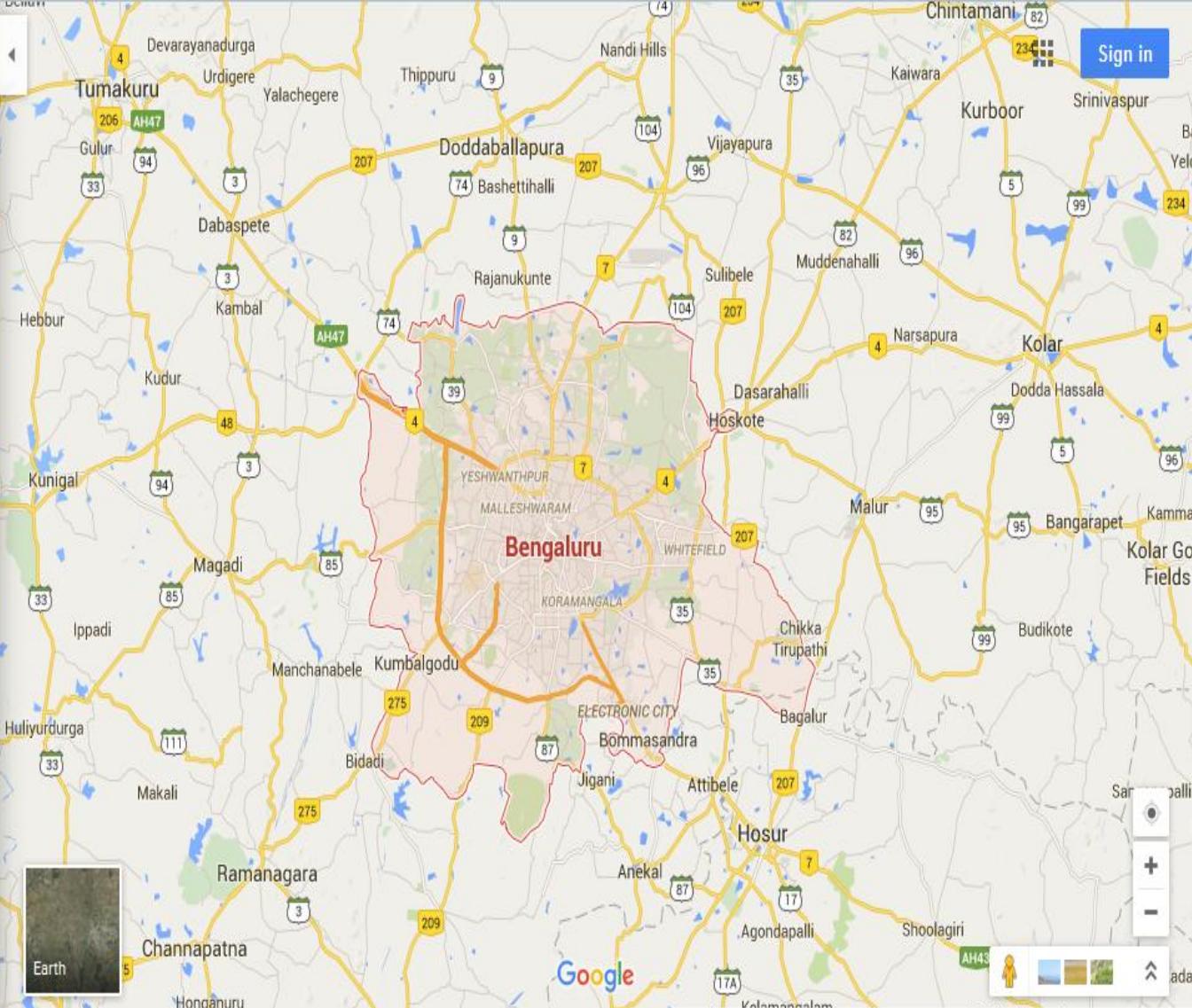
Directions

SAVE NEARBY SEND TO YOUR PHONE SHARE

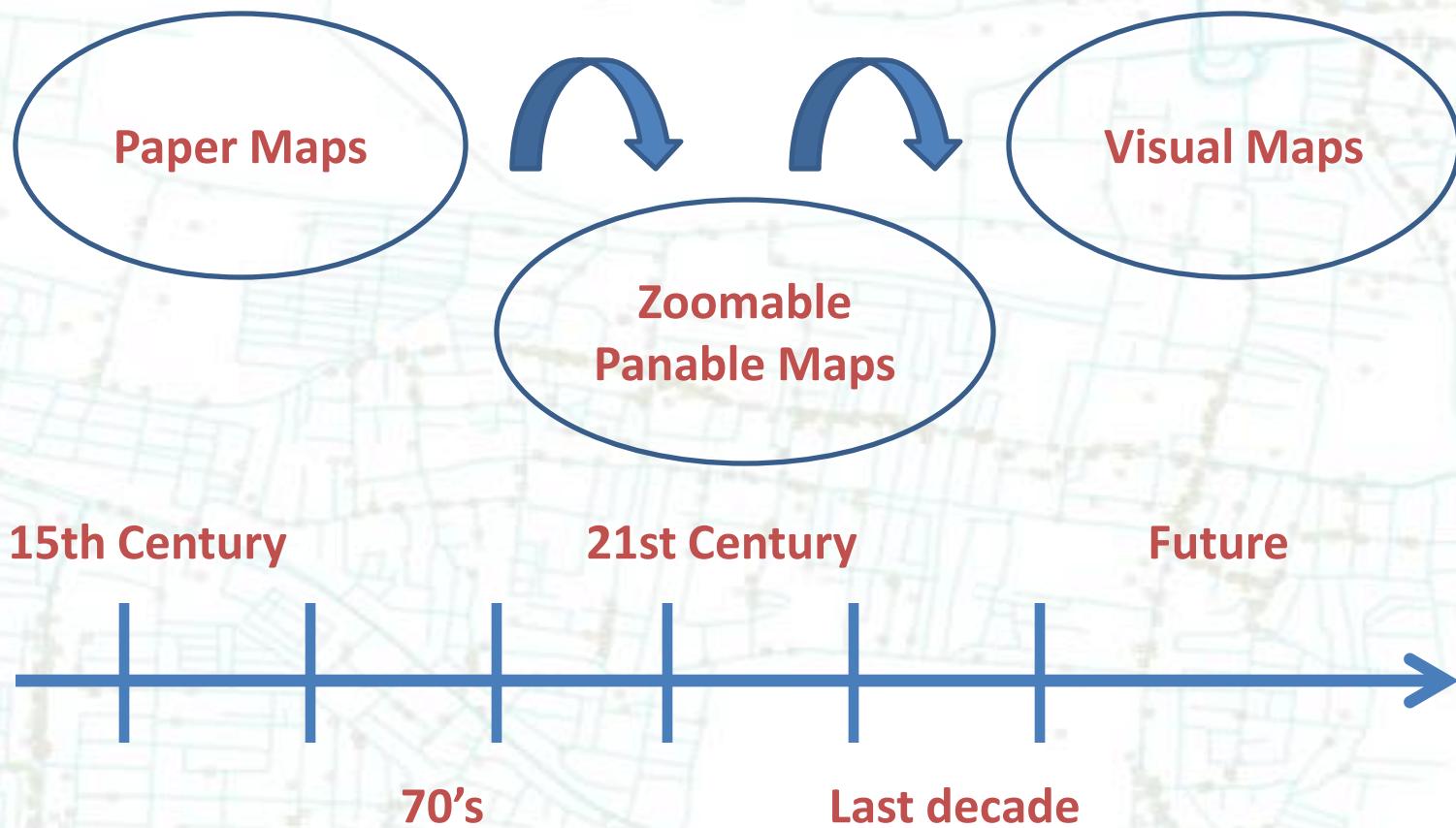
Photos

Photo Sphere

Quick facts



Evolution of Maps



Your
VideoMap My Home

360 View

IT Parks

+
Graduation

Business

Food

Cinema

Resorts

Shops

Hot JOBS

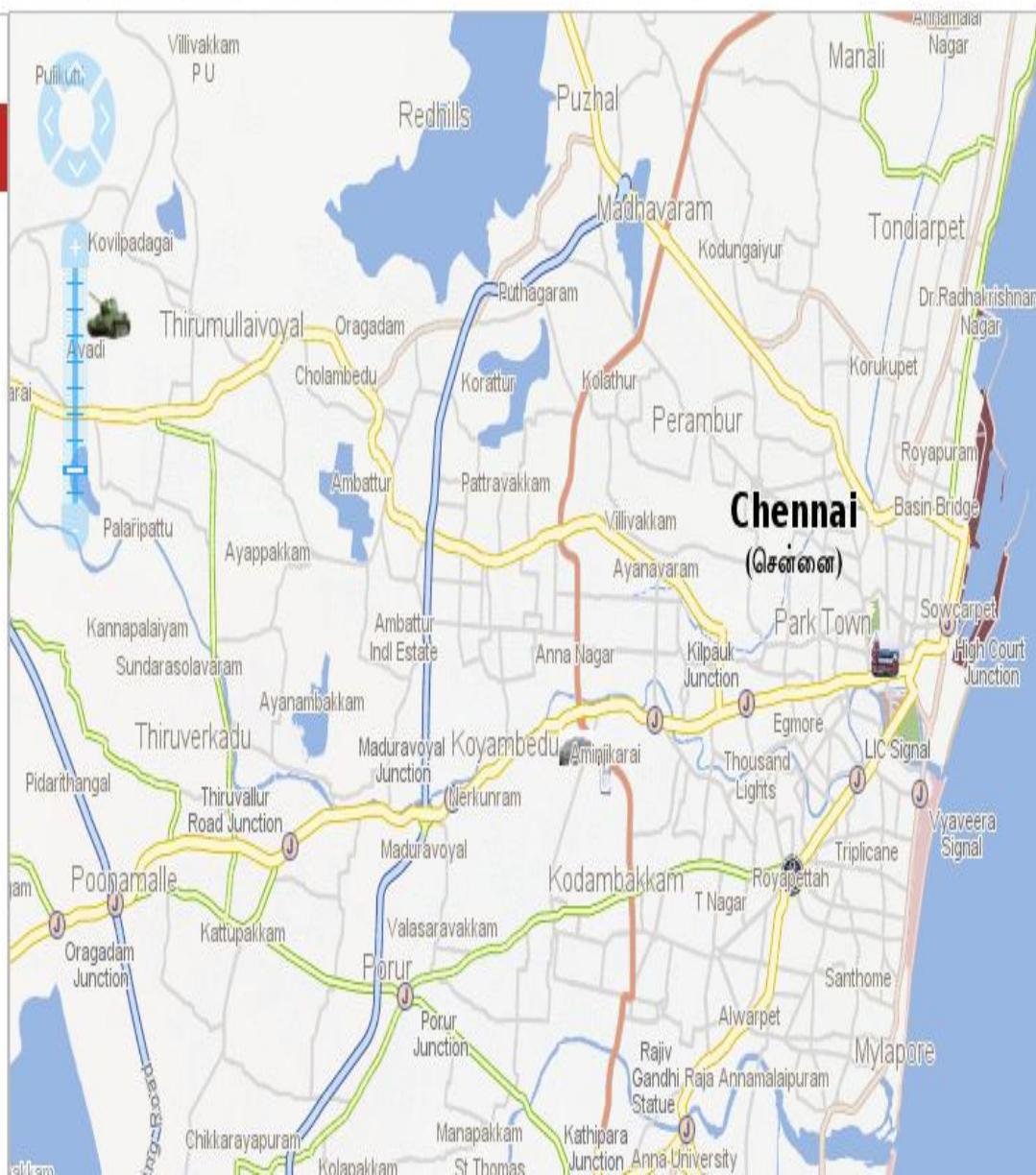


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



Bay of Bengal

Your
VideoMap My Home

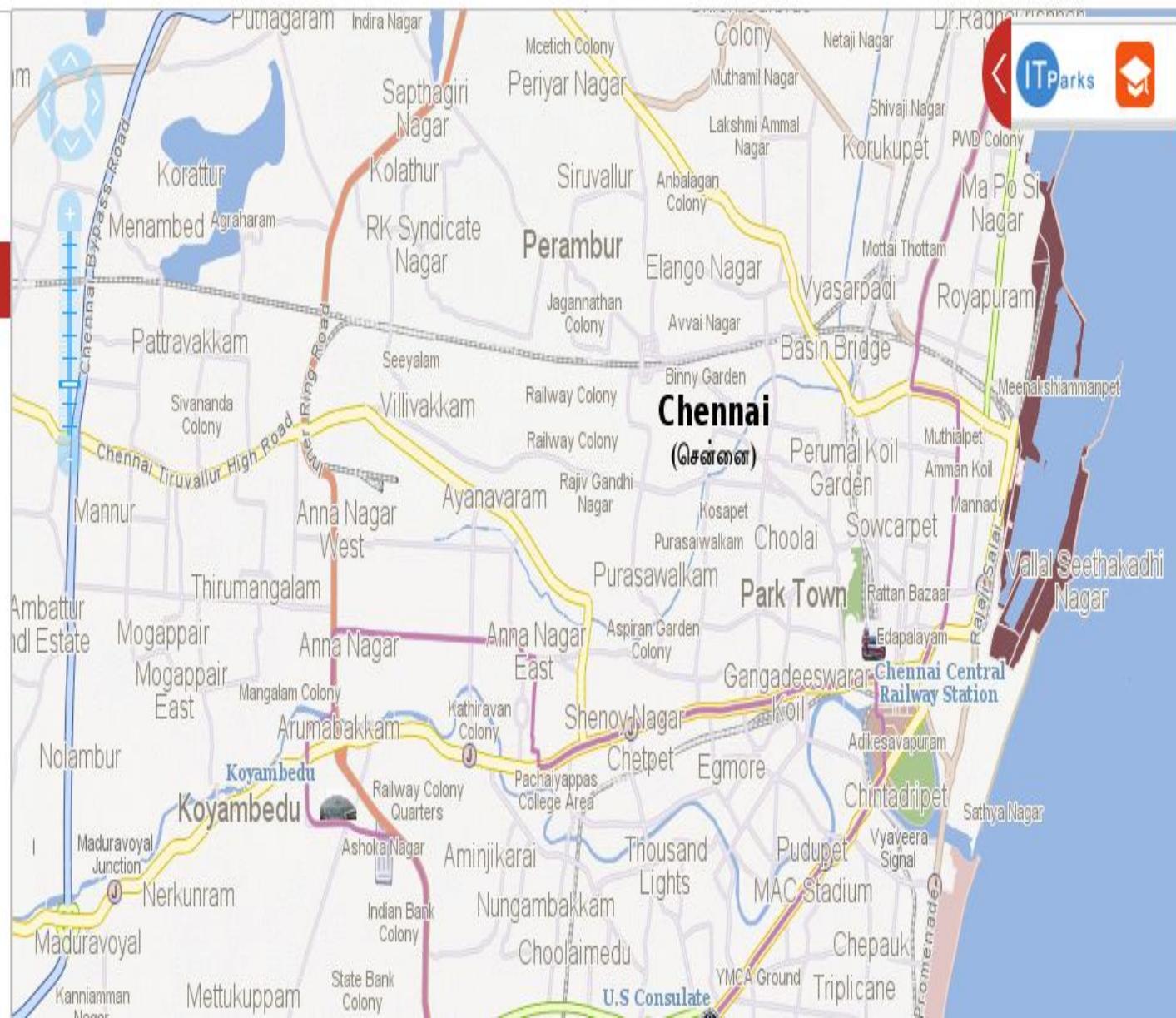


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



Your VideoMap My Home

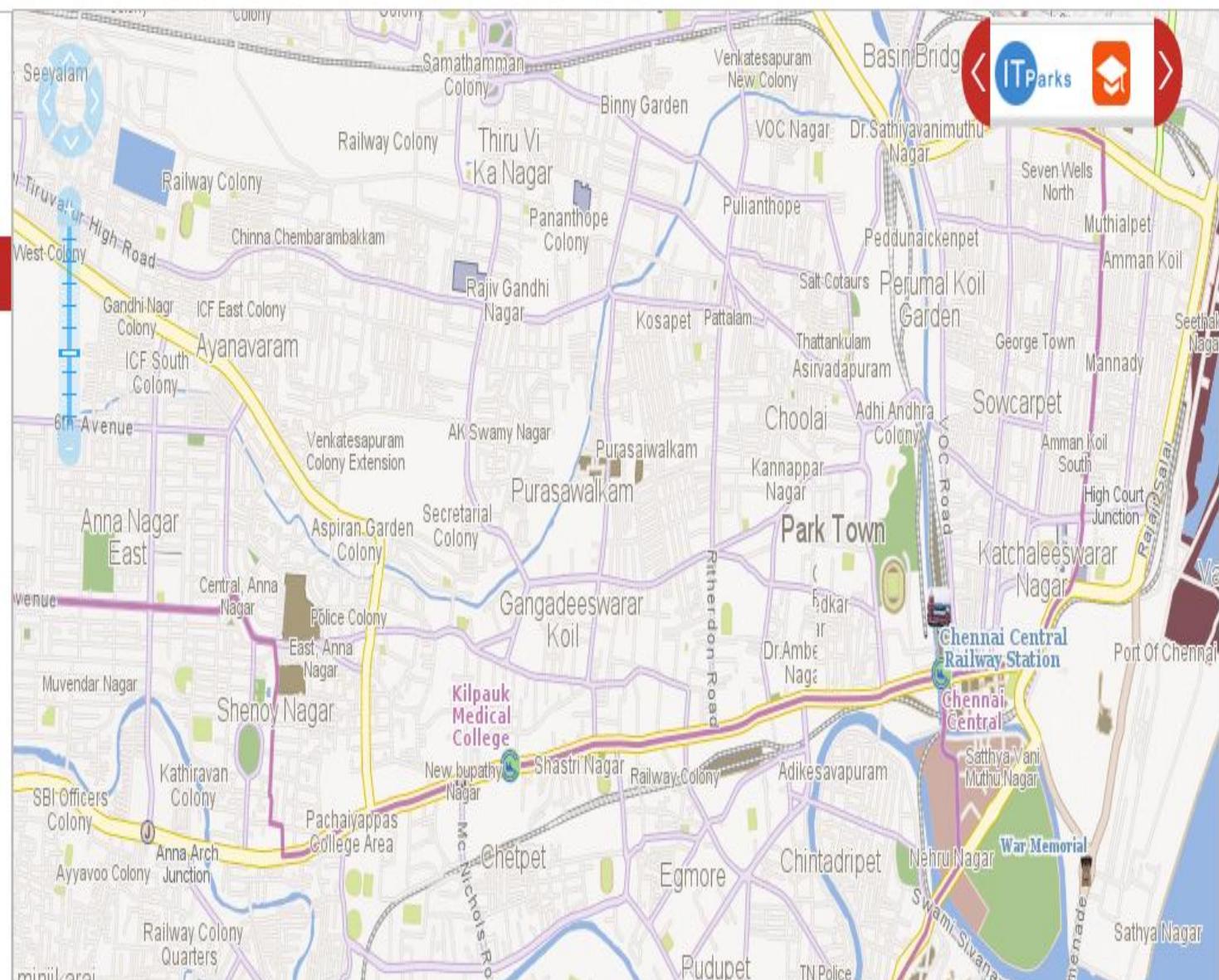


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



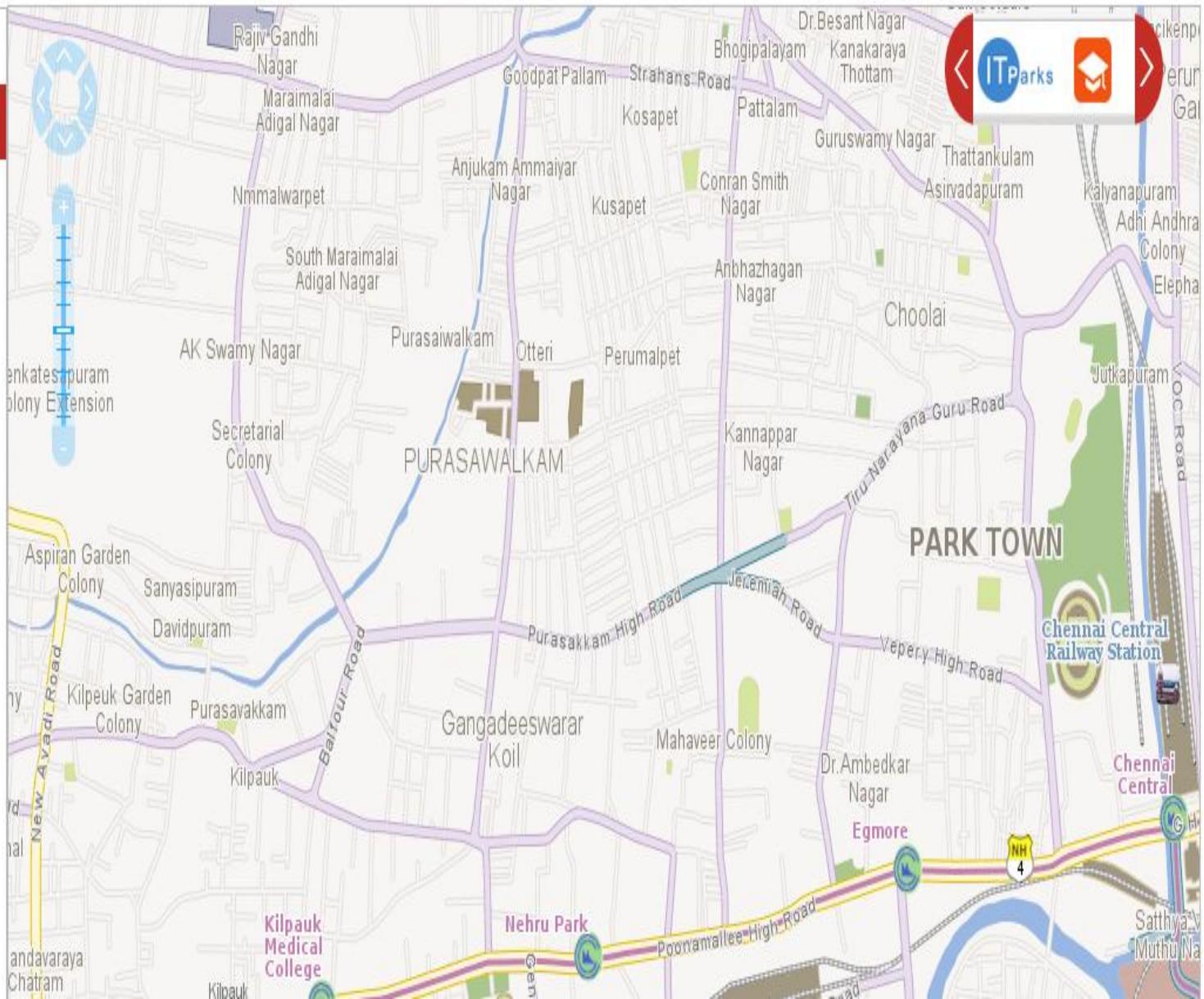


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



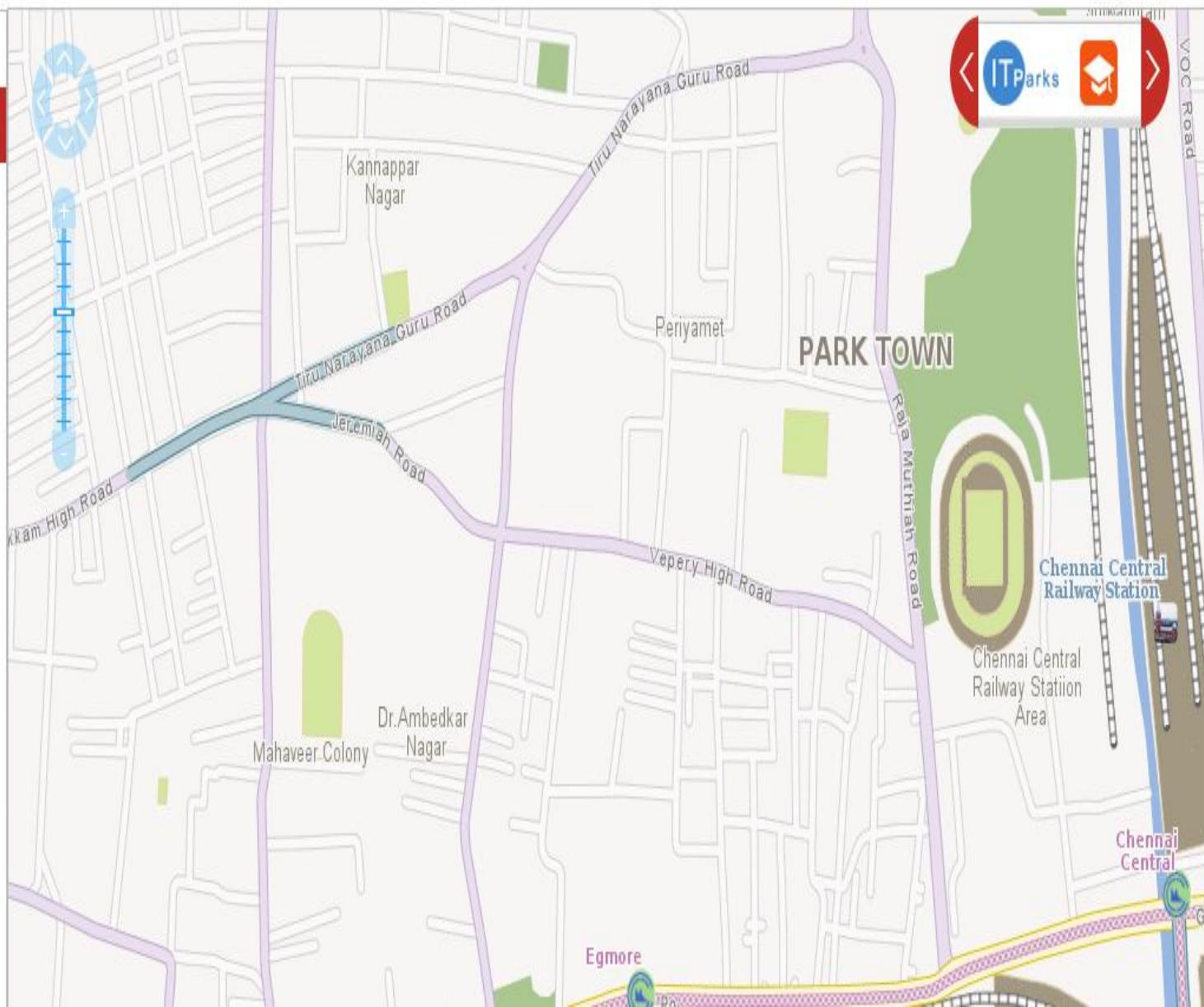


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



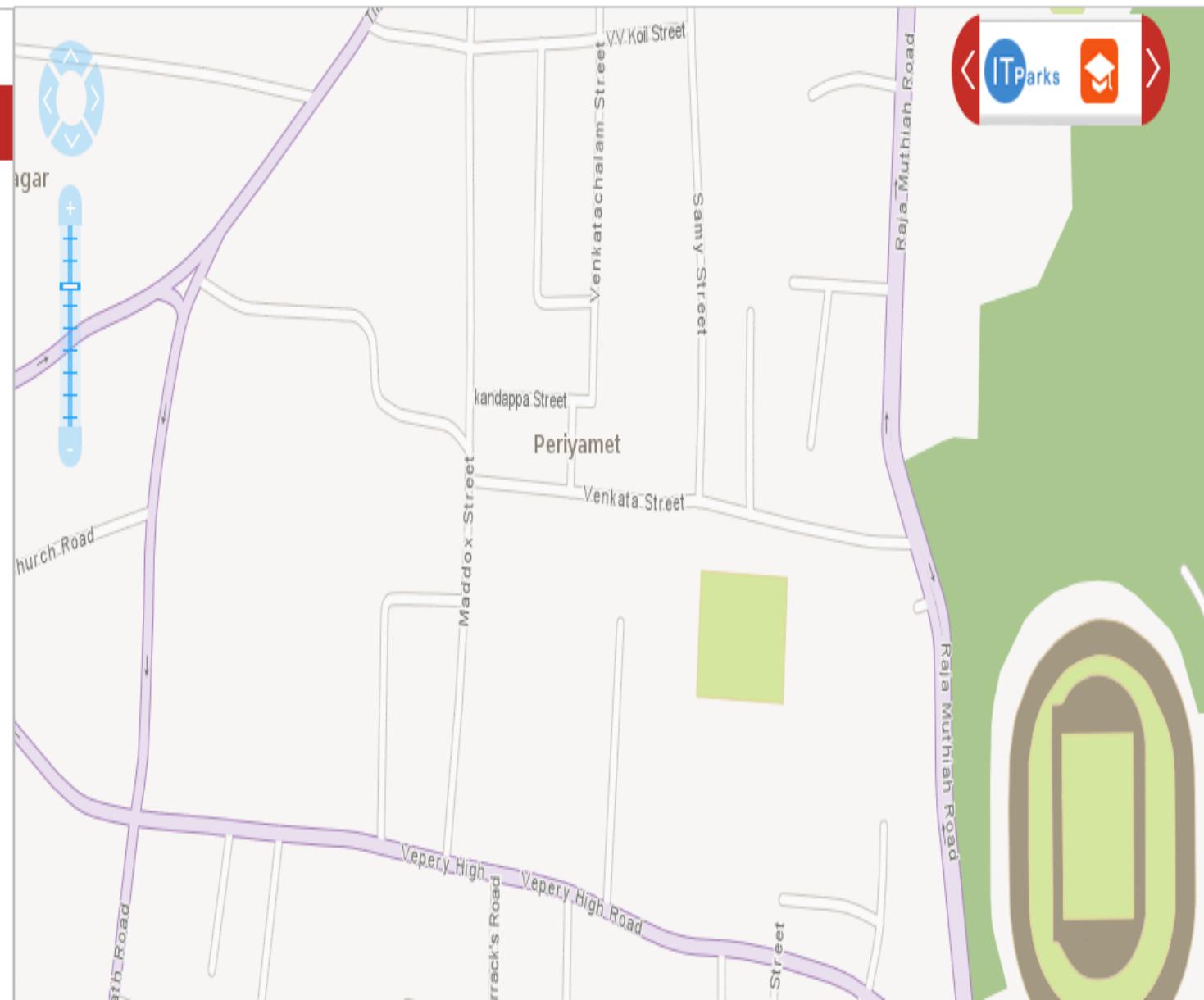


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



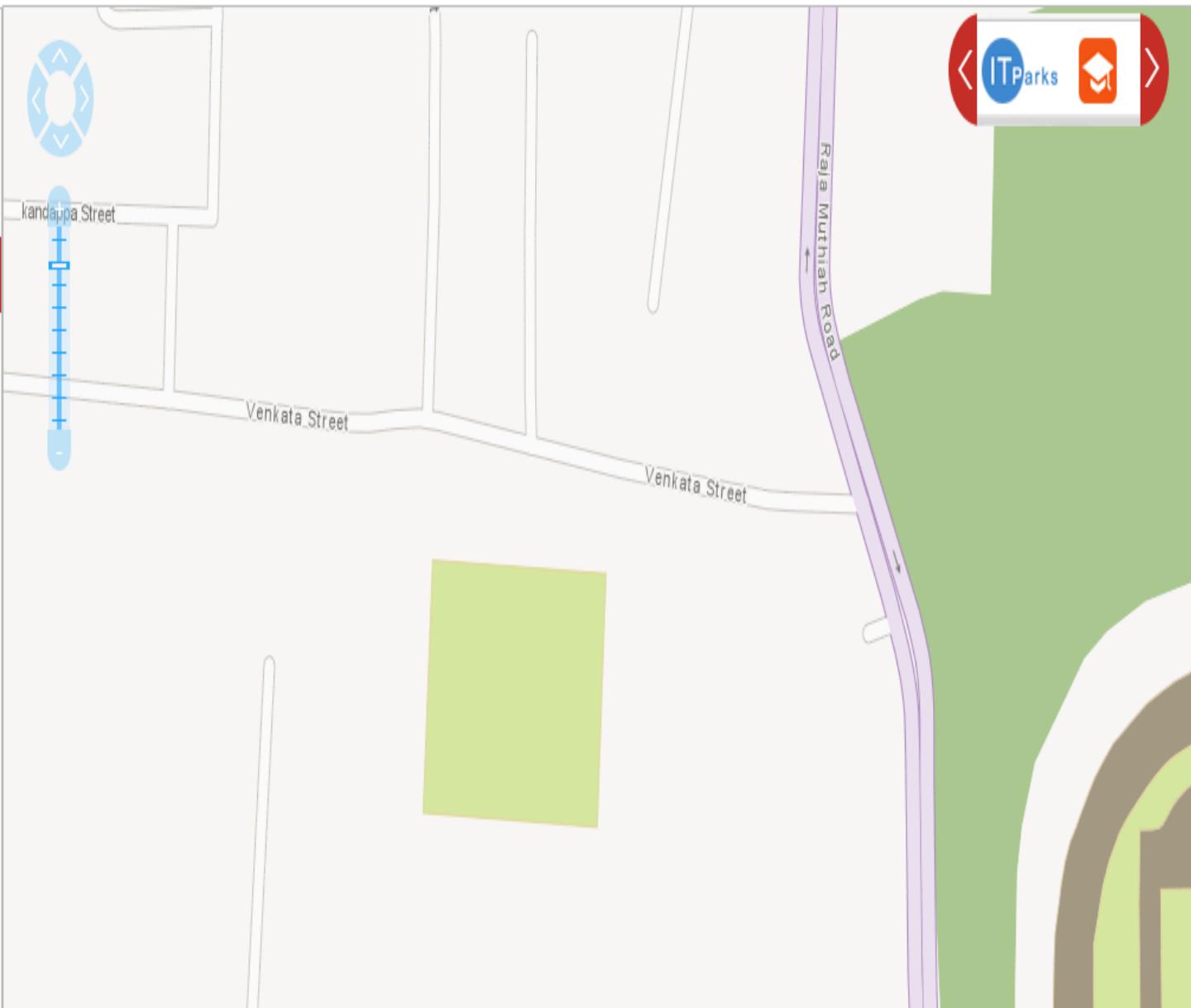


Use our Location Search for:

Locating an Area

Locating a Business

Locating a Road



Zoomable Panable Maps

- Google maps
- Sea of Tiles
- Legends
- Satellite overlays
- Road overlays on satellite pictures
- Web feature layer
- What is nearby

What are VideoMaps® Demo

- A video clip of the complete route from any source to any destination
- First we geocode the source and destination points
- Find the edges (roads) nearby
- Find shortest path TSP DJKSTRA
- Use travel time as cost
- Collect edges along with their video names
- Stream n Play videos back to back seamlessly
- Special FLV player to do pre-buffering

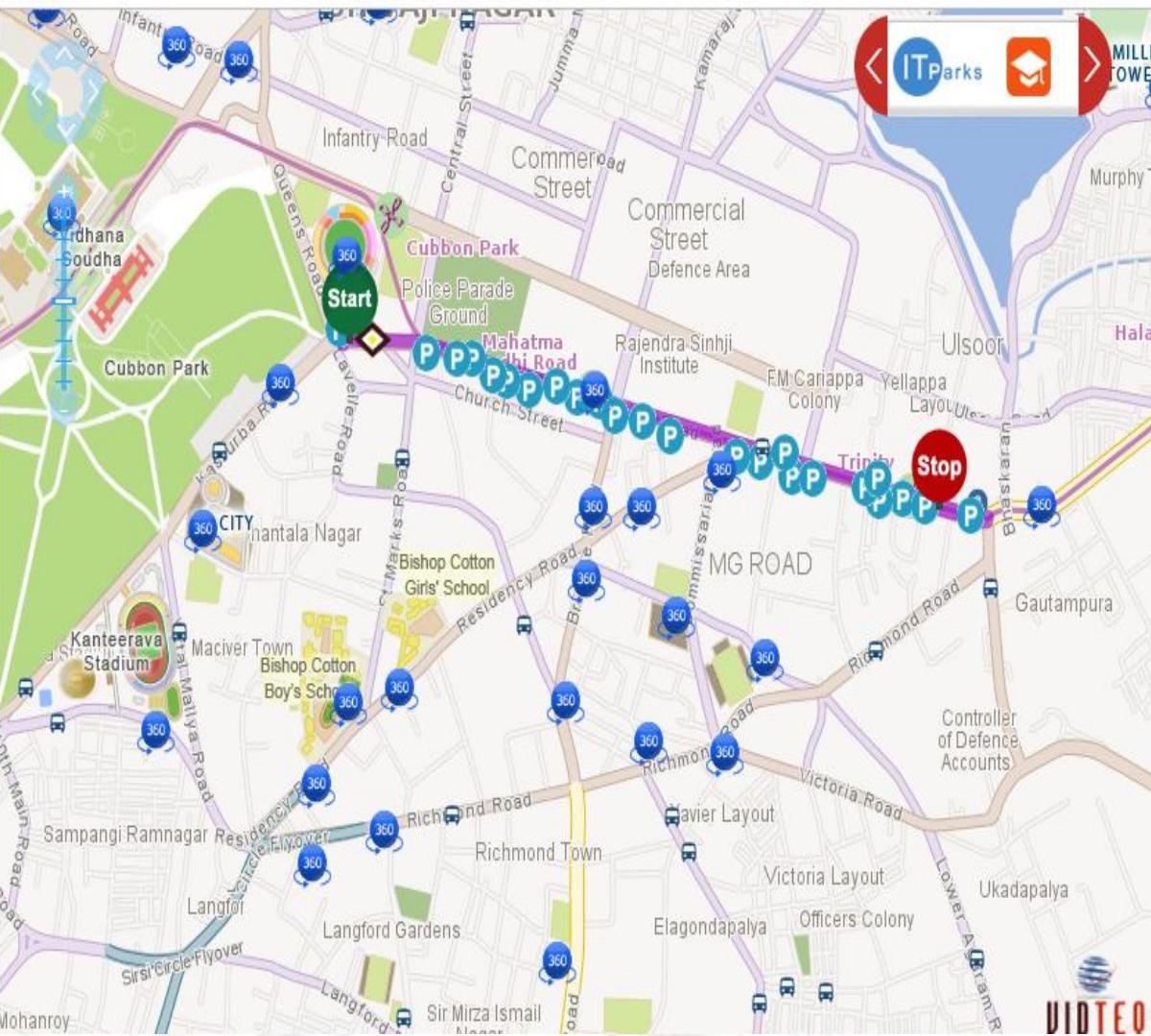


00:00:15/00:02:32

START 1. Get onto M G Road. Go for 2.44 Kms.
Pass by Mahatham Gandhi Park, (29 more ...), HSBC

2. Take U Turn onto M G Road. Go for 240 Meters.
Pass by DV Park Bank, (1 more ...), The Oberoi

STOP 3. You have reached your destination.



VIDTEQ

How Map & Videos are Stored

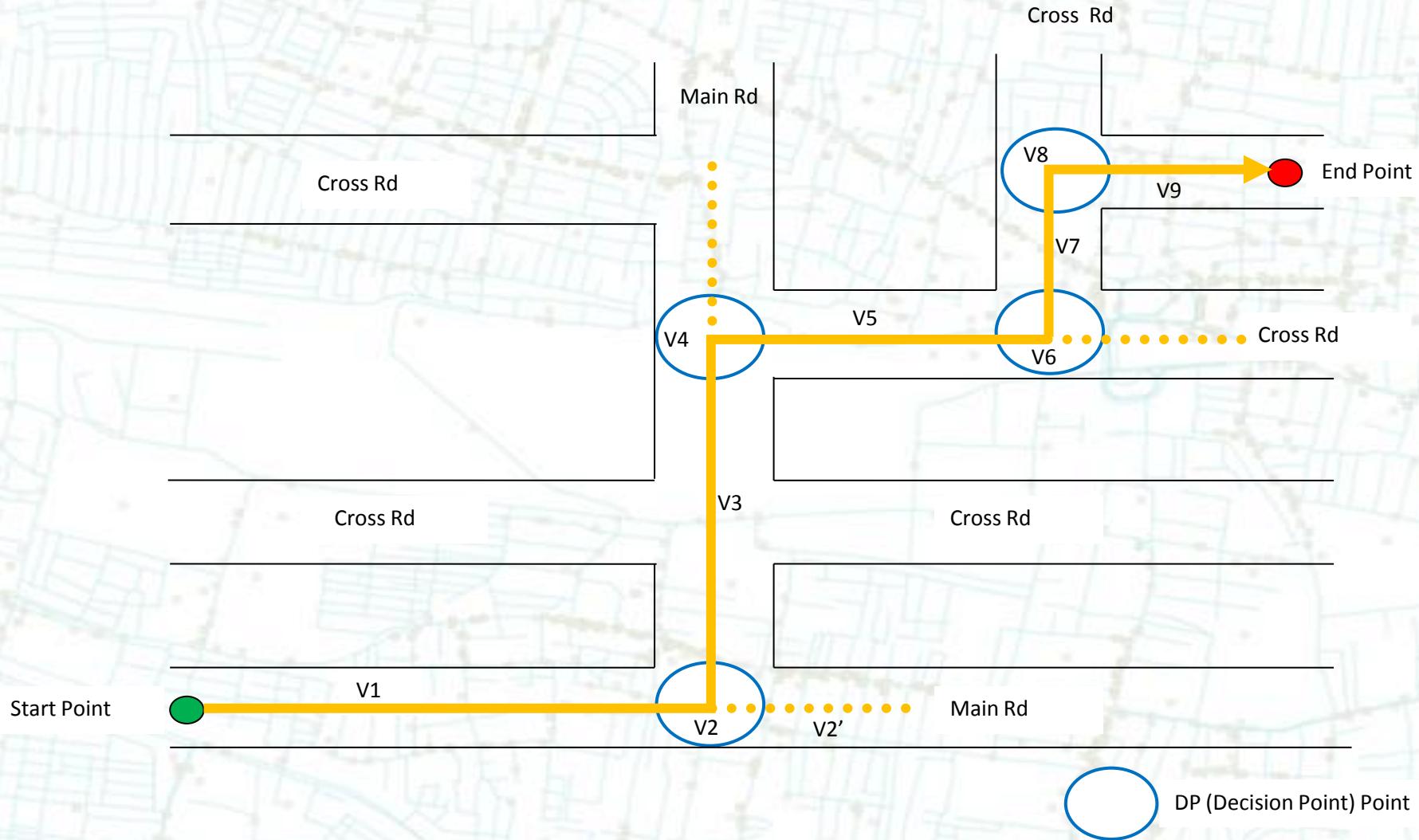
- Roads are Stored in Database
- Geospatial extensions – we use PostGIS over PostgreSQL
- Roads are stored as geometries, line string
- Video names are associated with roads
- Videos are stored in repository
- Videos are separately streamed

How VideoMap® Prepared

- Vehicle mounted with camera
- Record the video with GPS track
- Cut videos to the size of each road
 - Auto cut
 - Manual cut
- Edit speeds, decorations, legends and directions
- Compress and format convert for web delivery
- Do all these in automated way, automate
- Mass production, for 1 day delivery

Vehicle Mounted with Camera





V1, V3, V5, V7,V9 are **vidblocks**, V2,V4,V6,V8 are **viddps**

Vidi System for Vidteq Use (Videos) | Tickets Bangalore Total Tracks for bang-191015-T1 => 997 VidID 148739 Located

Get the last video back

VID_ID TRACK_NO Search

Fallback On(flv) Switch On RoughWork

FORW_STRING BACK_STRING

VB_F IND_BLR_KASAVANAHALLIMAINROAD_VIDBL
VB_B IND_BLR_KASAVANAHALLIMAINROAD_VIDBLO

BL 0:0:3 IND_BLR_KASAVANAHALLIMAINROAD_VIDDP
BS 0:0:1 IND_BLR_KASAVANAHALLIMAINROAD_VIDDP_
FS 0:0:0 zero
FR 0:0:0 zero

Upload Video

DuplicateFrom <Vidid>

Long Lat

ClearVbConflict <Vidid>

ClearDpConflict <Vidid>

Area Name

Road Name

Road Alias

One Way

20 m | 100 ft 77.67740, 12.91301

10.4.71.200/stage/vidi/vidiVideo.php#

S TRACKER

VIDTEQ www.VidTeq.com Scale = 1 : 1690 Permalink

Vidi System for Vidteq Use (Videos) | Tickets Chennai

Get the last video back

VID_ID 74515 TRACK_NO 74839 Search

Fallback On(flv) Switch On RoughWork

FORW_STRING _13.087088_80.270006_13.087242_80.268
BACK_STRING _13.087242_80.268508_13.087088_80.270

VB_F 0:0:0 zero
VB_B 0:0:0 zero

BR 26561 0:0:0 zero
BL 35615 0:0:0 zero
FR 74762 0:0:0 zero
FS 74535 0:0:0 zero

Upload Video

DuplicateFrom <Vidid>
Long Lat 80.2693218 13.0871494
ClearVbConflict GetVbConflict <Vidid>
ClearDpConflict GetDpConflict <Vidid>

Area Name Park Town
Road Name Venkata Street
Road Alias
One Way

100 m 80.26895, 13.08583

Chennai Map showing street layout and a large green area representing a park or stadium. A red line segment is drawn across Venkata Street. A green line segment connects Venkata Street to Maddox Street. A pink line segment follows Raja Muthiah Road. A blue line segment follows VIP Hall Compound Road. A purple line segment follows Vepery High Road. A light blue line segment follows Malasri Street. A light green line segment follows Barrack's Road. A light purple line segment follows Samy Street. A light pink line segment follows Venkatachalam Street. A light blue line segment follows VV Koil Street. A light green line segment follows Periyamet. A light blue line segment follows kandappa Street. A light green line segment follows Tiru Narayana Guindy Road. A light blue line segment follows Jeremiah Road. A light green line segment follows Gopal Street. A light blue line segment follows Kann Street. A light green line segment follows Narayana Street.

VIDTEQ www.VidTeq.com Scale 1:13379 Permalink

What Are Other Forms of Visual Maps

- Google Streetview, Wonobo
- 360 Panorama
- 3D – WebGL based map rendition
- 3D – model based rendition



Bhaskar Mangal
Head of Product & Business Development
VidTeq India Pvt. Ltd.

Geospatial APIs

Geospatial APIs

Skills you will be able to demonstrate after this section:

- 1.Understand Different type of APIs and Geospatial APIs
- 2.How to create Data API
- 3.Storing and using geospatial Data to create your first location aware application

Objectives - I

- 1.Understand that location is one of the dimension of any Business these days and acquiring the skills to handle location data will give you an edge in your career
- 2.Identification of basic (Non-scientific) need for Geospatial from consumers perspective
- 3.Defining geospatial problems
- 4.Setup to store & visualize geospatial data

Defining Problem Statements

Fundamental building blocks for Problem statements:-

1. Where (Identification, Location)
2. How (Execution, Implementation, Curiosity)
3. When (Temporal i.e. Time, Event)
4. What or Which (Curiosity, Analysis)
5. Why (Analysis, Logical reasoning)

Problem Defined

1. Where is ITPL in Bangalore?
2. How do I reach ITPL from my home?
3. When should I leave from home to reach ITPL on time?
4. Which is the nearest bus stops to ITPL? And, Which is the nearest bus-stop to my home?
5. Why there is traffic jam near ITPL?

Solution

- ITPL is the point of Interest. It can be represented as (lon,lat) – Geo-coding
 - ‘my home’ needs to be located and then from there I need to find the route to reach ITPL – Geo-coding & Routing
 - I need to find nearest bus-stop to my home and near ITPL – Search Nearby
 - If I know how far, I can deduce the time I should leave from my home considering traffic jam near ITPL – Routing & Commute Distance
-
- Geo-coded data is stored in Geospatial databases, PostgreSQL with PostGIS add-on
 - Data is stored as geometries (Basic building units are Points, Lines, Polygons)
 - Routing, commute distance calculation is done by creating a Node Network - Travelling Salesman Problem (Dijkstra's algorithm)
 - Nearby is distance calculation using linear algebra

Exercise 1

1. Install PostgreSQL database and PostGIS (Refer: appendix B for Installation in PostGisInAction e-book. It can be downloaded from <http://www.it-ebooks.info/book/1544/>).
2. Install OpenJUMP workbench (Refer: Ch12.2 : OpenJUMP Workbench).
3. Create a poi (point of interest) table to store sample data for real estate properties in Chennai
4. Visualize these properties in OpenJUMP Workbench

Bonus: VidTeq Geoviewer tool for quick geospatial data visualization

1. Excel File having (lon,lat) columns can be visualize at VidTeq Geoviewer tool: <http://vidteq.com/nemo/map.php?city=chennai>
2. Try uploading the sample data for Chennai using Geoviewer tool

Geoviewer

Nemo Geospatial API

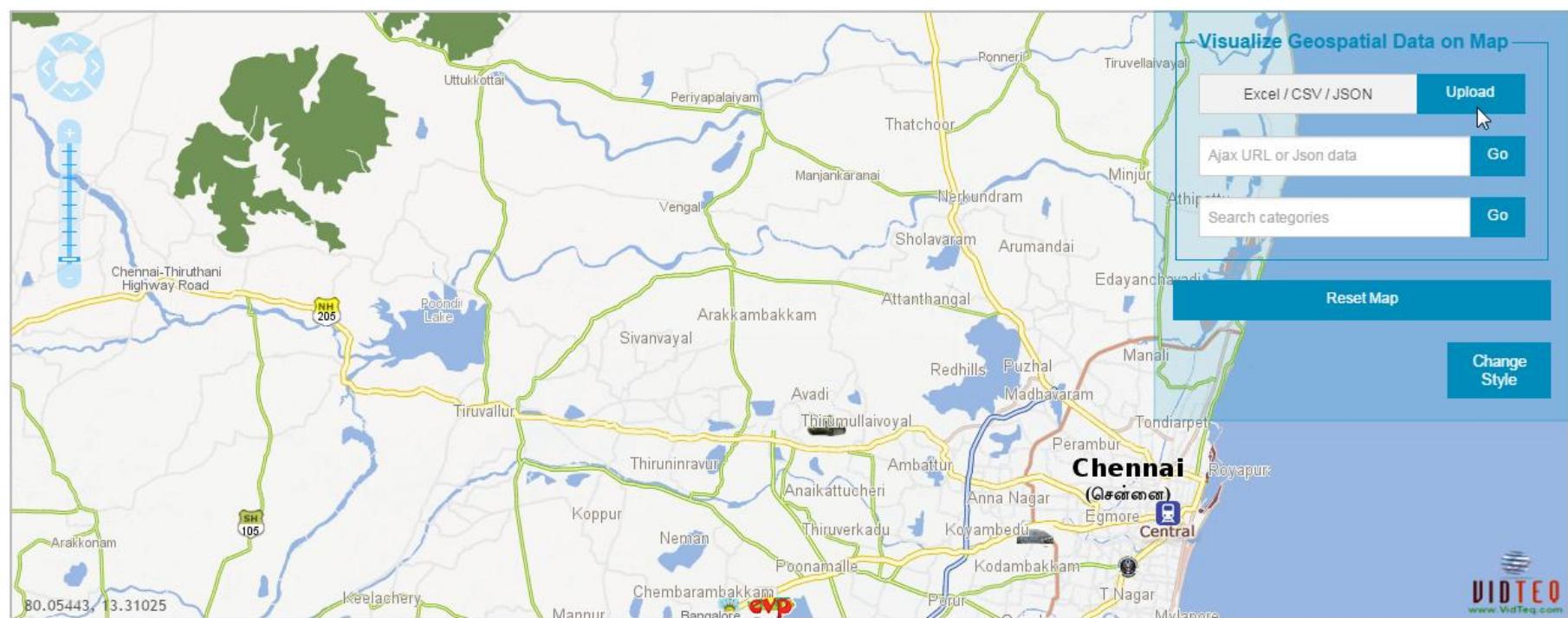
Map My Home

Map Tools

Docs

Administration

Demos



<http://vidteq.com/nemo/map.php?city=chennai>

Objectives - II

Basic Building Blocks for Location Aware Applications or Geospatial Applications:-

1. Geo-coding, Reverse geo-coding

2. Routing, Commute Distance

3. Nearby

Using certain building blocks single or multiple times in different permutation and combination can provide answers from simple to highly complex questions.

Combination of the these Geospatial APIs along with different representation techniques provides innumerable opportunities for creating Unique experiences.

Using certain building blocks single or multiple times in different permutation and combination can provide answers from simple to highly complex questions.

Geospatial Applications APIs

1. **Autosuggest**:- Auto suggest geo locations
2. **Image Map**:- Get the image of the location at certain zoom level (level of details) for a given location (lon, lat)
3. **Poi**:- Point of Interests within X Km (aerial or commute distance) from given point location
4. **Commute Distance**:- Commute distance for all the property listings
5. **Geo-Analytics**:- Locality goodness, amenities star ratings
6. **Route**:- Get the commute route From start (lon, lat) To end (lon, lat)
7. **Video Route**:- Get the Video Route/Direction From start (lon, lat) To end (lon, lat)
8. **Search Near By**:- What are the amenities like hospital, coffee shops etc nearby for a given location (lon, lat)
9. **Locality**:- What's the locality/area for a given location

Objectives - III

- 1.Understand different types of APIs
- 2.Create API to fetch the data from the database table created in Exercise 1
- 3.What is RESTFull API

Different Type of APIs

I would loosely defines API as a mode of communication between two or more entities or systems, Knowingly or unknowingly you are using Javascript APIs and Data APIs.

Javascript API's will offer you applications as a black box that will use Data APIs for CRUD [Create, Read, Update, Delete] operations.

You will be required to include javascript snippet in the script tag, that will inject Js objects in the client side. This is call js seed and it will always creates an object(s) in global namespace.

This seed will further load the dynamic components as required. But, the application will be usable only when validations, authentication happens either just before the js seed is injected at the client side or through automatic AJAX requests to the API providers.

In my view point, while Designing the JS API, following things are of highest importance based on the APIs usage:-

- a) Asynchronous loading and execution
- b) Cross-domain handling
- c) Consistent API definitions
- d) Speed & load size of injecting initial js seed

From here on, we will talk mainly about Data and REST APIs

www.programmableweb.com, a site that tracks more than 13,000 APIs.

How to create Data API

Steps to create a Data API to fetch the geospatial data:-

1. What kind of CRUD operation is it: fetch is READ which is a ‘SELECT’ SQL
2. What are the inputs required to the SELECT SQL
3. Server side, create a script which will:-
 - a) Read the inputs from the incoming request URL
 - b) Prepare SQL query to be executed
 - c) Database operations:
 - i. Connect to the database
 - ii. Execute the query
 - iii. Process the result returned by the query
 - d) Return the processed result of the query to the client

Tip: If you have not completed Exercise 1, you still can create the API by reading the data from file

<http://www.example.com/exercise1.php?action=getListings&limit=2>

RESTFull API

What is REST - representational state transfer (REST) is Architectural style
Uses HTTP Verbs (GET, POST, PUT, DELETE, etc.) for CRUD operations

The Data API URL:

`http://www.example.com/exercise1.php?action=getListings&limit=2`

In its RESTFull representation will look like:

`http://www.example.com/exercises/1/listings?limit=2`

RESTFull APIs is a separate topic of discussion altogether and we can take this topic in future.

Industry Ready Tip:

1. Skill to design and develop RESTFull API

VidTeq Geospatial RESTFull API

RESTFull API is an Intuitive way to share Data from different application providers, for example: -

POI (Point of Interest) API:

Get **schools** in **chennai** which are **1000** meters from a given location

Sample request:

GET

`http://www.vidteq.com/api/nemo/v1/cities/chennai/categories/schools/locations>{"lon":80.210225,"lat":12.935052}/pois>{"distance": 1000}?urlid=Vidteq&key=vit&limit=1`

GET

BaseURI/cities/<city:id>/categories/<categories:id>/locations/<location:id>/pois/{"distance":1000}

```
▼ {responseType: "pois", srf: [{srfType: "pois", srfIndex: 0, results: [...], source: "server"}]}
  responseType: "pois"
▼ srf: [{srfType: "pois", srfIndex: 0, results: [...], source: "server"}]
  ▼ 0: {srfType: "pois", srfIndex: 0, results: [...], source: "server"}
    ▼ results: [...]
      ▼ 0: {poiid: "ZptYXb0b0jn+G3W5i7W4MkWYxRi69exxyK0GzdETH9A=", name: "Peniel Matric Hr Secondary School",...}
        addr1: "No 1"
        areaName: "Selvam Nagar Main Road, Pallikaranai"
        category: "Schools"
        ► categoryList: [{categoryno: "201", category: "Schools"}]
        distance: "380 Mt"
        distanceUnformatted: 380.13911090966
        geom: "POINT(80.2069 12.935833)"
        graphicXOffset: 0
        graphicYOffset: 0
        id: "ZptYXb0b0jn+G3W5i7W4MkWYxRi69exxyK0GzdETH9A="
        idx: 0
        image: "id/idtvcDOVMVPVDVIQMTTOT.jpg"
        location: "Chennai"
        name: "Peniel Matric Hr Secondary School"
        pin: "600100"
        poiid: "ZptYXb0b0jn+G3W5i7W4MkWYxRi69exxyK0GzdETH9A="
        ► popup: {type: 1}
        priority: "4"
        source: "server"
        srfIndex: 0
        srfType: "pois"
```

Future Prospects

- Interdisciplinary approach:
 1. Video & Image Processing
 2. Computer Graphics, 3D Modeling & Visualizations, WebGL
 3. Applications of Artificial Intelligence in GIS
 4. Geospatial Analytics
 5. Geospatial Visualization & Gaming

What's Next

1. Feedback
2. Pragmatic approach to learning basics,
example computer graphics , vectors &
matrices
3. Community building

A faint, light gray watermark of a city street grid serves as the background for the slide. The grid consists of numerous streets forming a complex network of rectangles and intersecting lines.

THANK YOU