

GNSS Scenario in India

GNSS scenario in India

By

Dr Ashok Kaushal

Content

GNSS scenario in India

- **Introduction**
- **Significance of Location**
- **Trends**
- **G³ perspective**
- **Location Based Services**
- **Business Potential**
- **Challenges**
- **About ASL**
- **Concluding Remarks**

Introduction

GNSS scenario in India

- **Miniaturization of chips & reduction of prices**
- **Enhanced use of location sensitive devices**
- **Removal of restrictions on GPS accuracy**
- **Proliferation of cell phones**
- **Mobility of people/ assets**
- **Enhanced use of WWW**
- **Awareness in significance of location data**
- **Development of open standards**
- **Availability of map data from multiple sources**
- **Adoption of new map policy by Govt. of India**

Significance of Location

- Discover *timely location-sensitive* business intelligence
- Process location-sensitive alerts & transactions
- Organize business activities by location & time
- Find or track a customer, place, asset, ...
- Coordinate field operations
- Provide customer service
- Plan and track delivery services

GNSS scenario in India



Trends

- **Emphasis on info/ service in place of data/ tools**
- **Solutions driven by**
 - **Technology**
 - **GNSS**
 - **High resolution satellite imagery**
 - **Applications**
 - **Use of SCOTS/ OSS tools for development**
 - **Consensus on standards & interoperability**
 - **Data/ Content**
 - **Use of COTS data from multiple sources**
 - **Use of Web GIS for data dissemination**

GNSS scenario in India

Trends

GNSS scenario in India

- **Spread of wireless communication along length and breadth of the country**
- **Growth of Internet & Broadband (including last mile connectivity)**
- **Easy access to GNSS for applications in positioning, navigation and tracking of mobile assets**
- **Emergence of Google Earth & Virtual Earth for dissemination of location info on Web**
- **Community participation in Wikipedia/ Wikimapia for knowledge management**

Trends

Indian Telecommunications Scenario

- **232.9 million users (including 193 million wireless subscribers) as of July 2007**
 - 7.1 million wireless subscribers registered in June 2007 and 8.1 million in July 2007
- **462 million wireless subscribers (38.6% of total population) projected to reach in 2011**
 - 58% of rural population & 95% of urban population with mobile phone by 2011
 - Manufacturing of 107 million mobile handsets in India by 2011
- **Wireless subscription may exceed 50% by 2015**

Trends

World scenario

- **Mobile subscribers will grow by another 500 million to reach 3 billion by end of 2007**
 - **Share of India is estimated at 80 million**
- **Growth of global mobile industry:**
 - **~ 40 million subscribers per month**
 - **Share of Asia Pacific is estimated at 41%**
- **India and China accounted for 25% of growth worldwide over previous year**

GNSS scenario in India

Trends

Mobility

- 24 x 7 x 365 business through adoption of WWW
- Growth in number and functions of cell phones
- Enhanced business with population on move
- Exchange of location info to personnel for field data acquisition and providing services to users
- Management of mobile assets (trucks, railways) based on their locations at any moment
- Effective response through integration of wireless communication with positioning technologies
- Common framework using industry standards

GNSS scenario in India

G³ Perspective

GNSS scenario in India

Satellite Navigation

Acquisition

GNSS

Transmission

GSM/ GPRS

Wireless Communication

G³

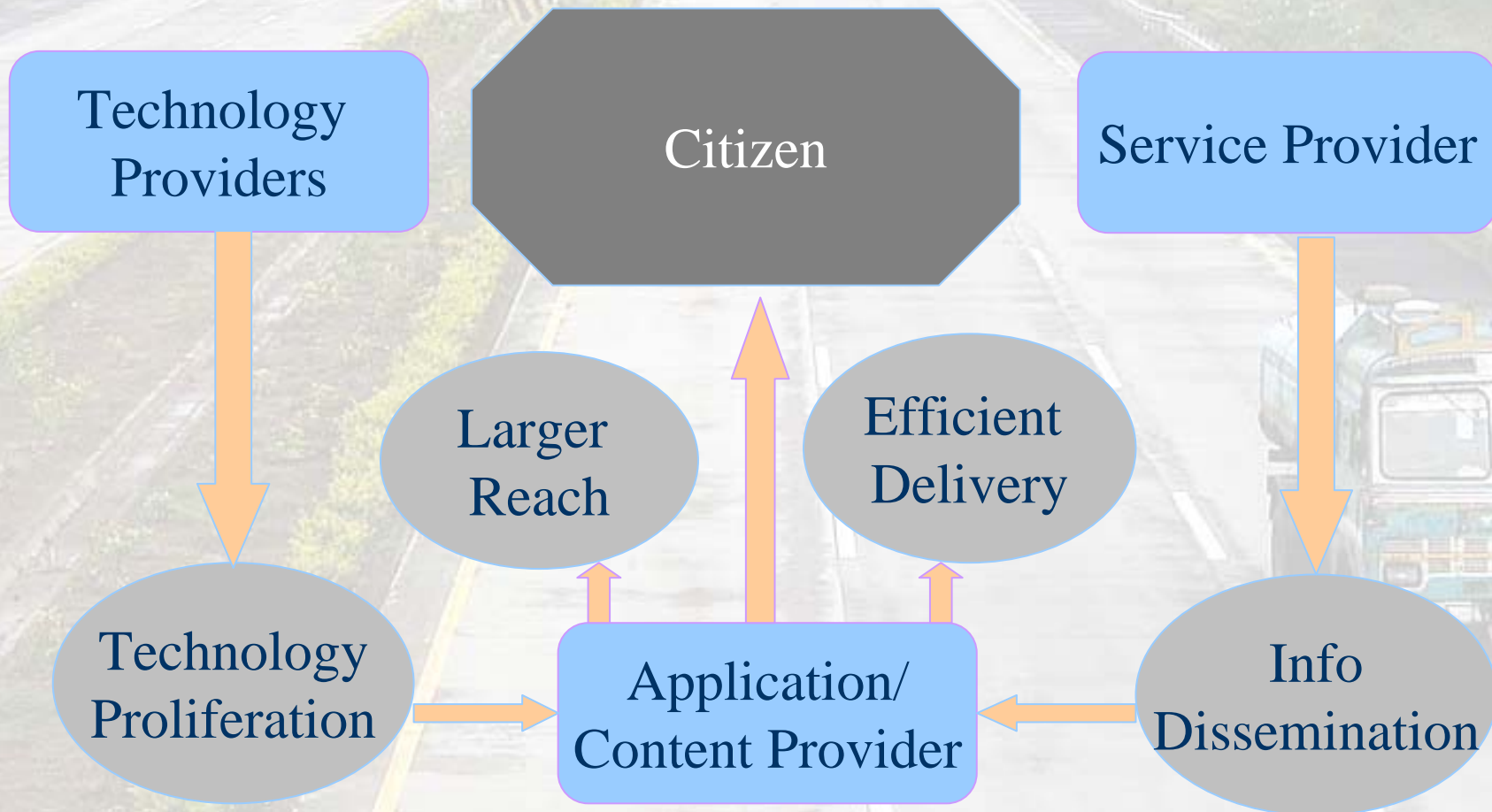
Analysis

GIS

Spatial (Map) Data

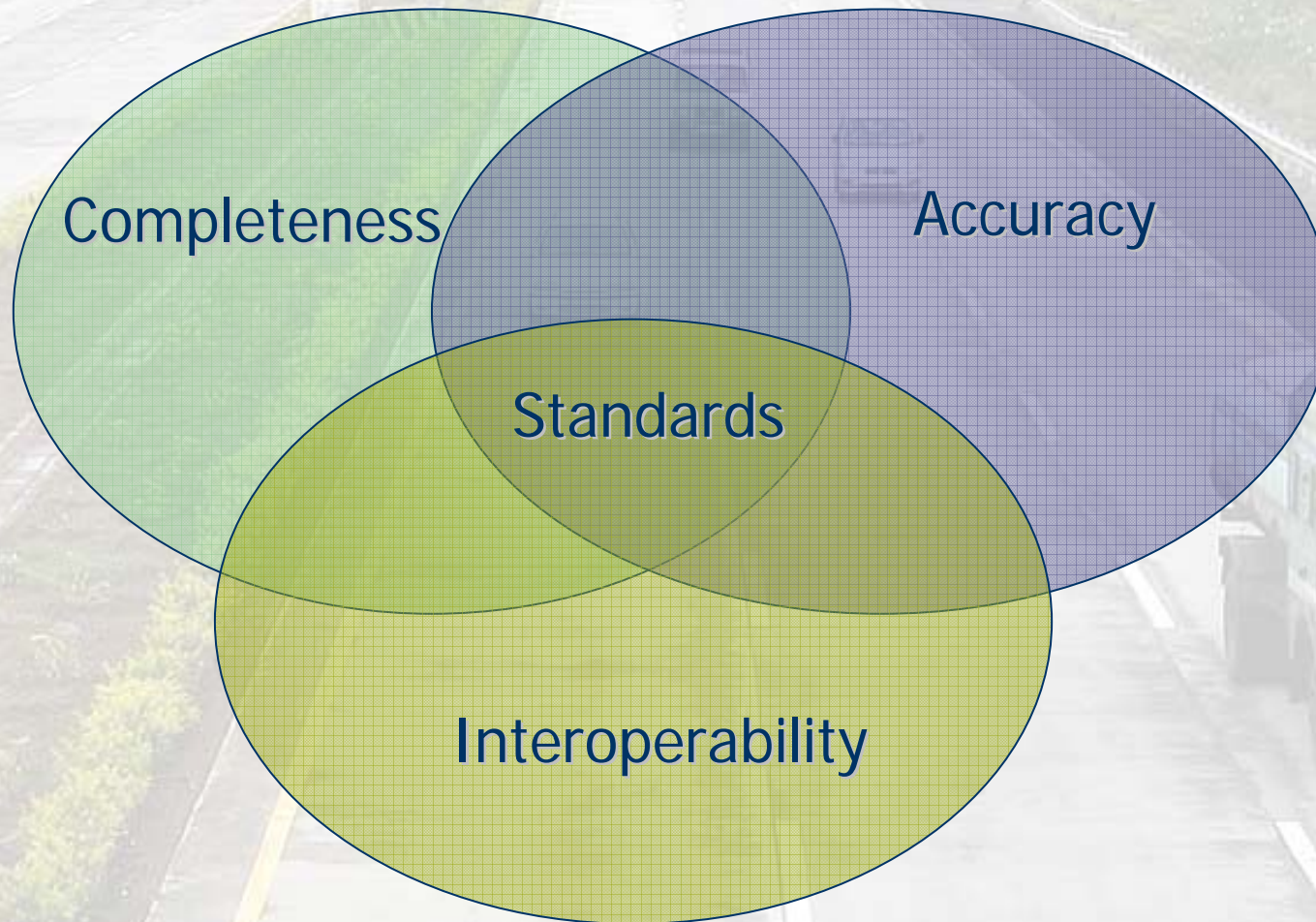
G³ Perspective

GNSS scenario in India



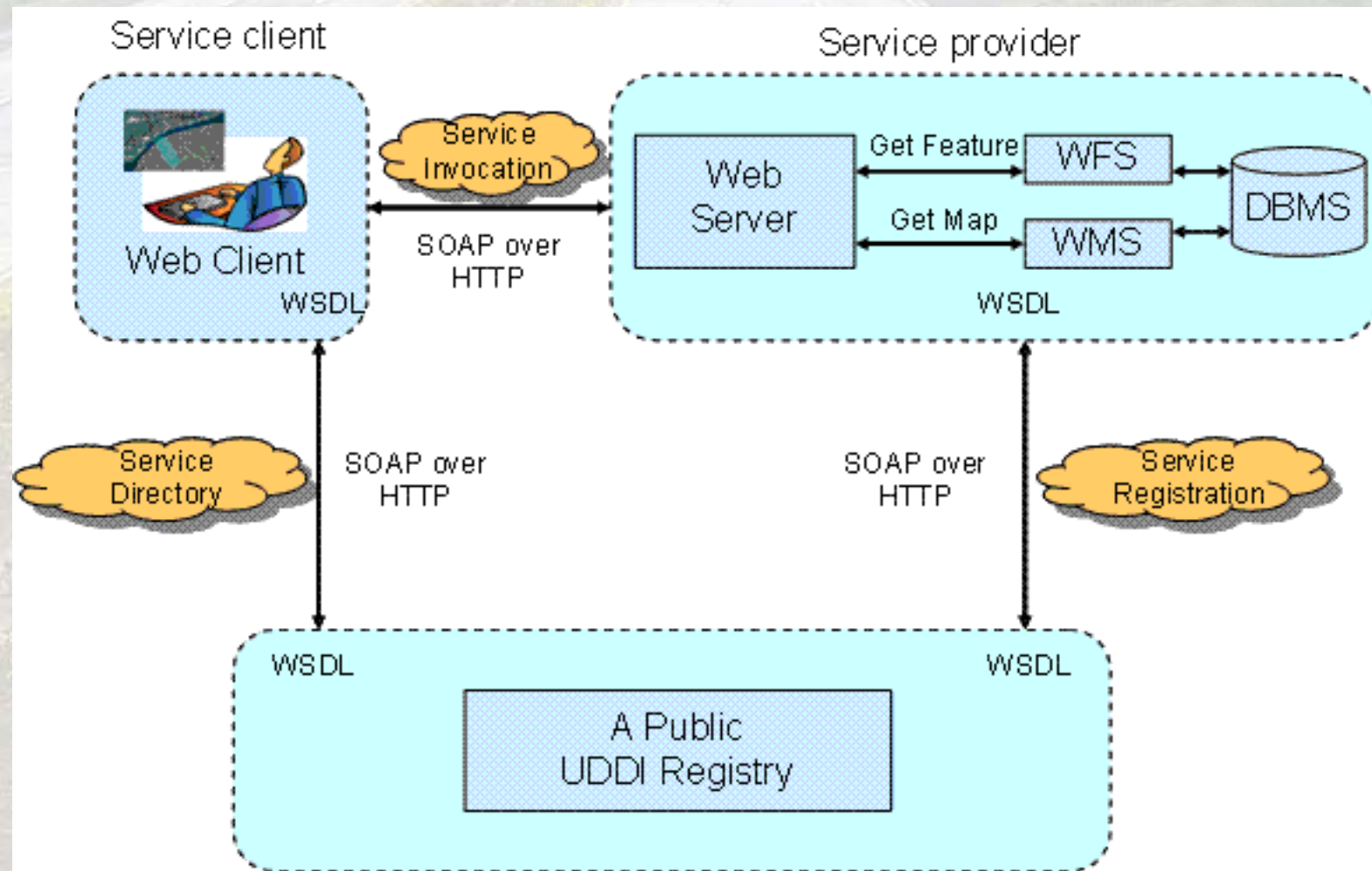
G³ Perspective

GNSS scenario in India

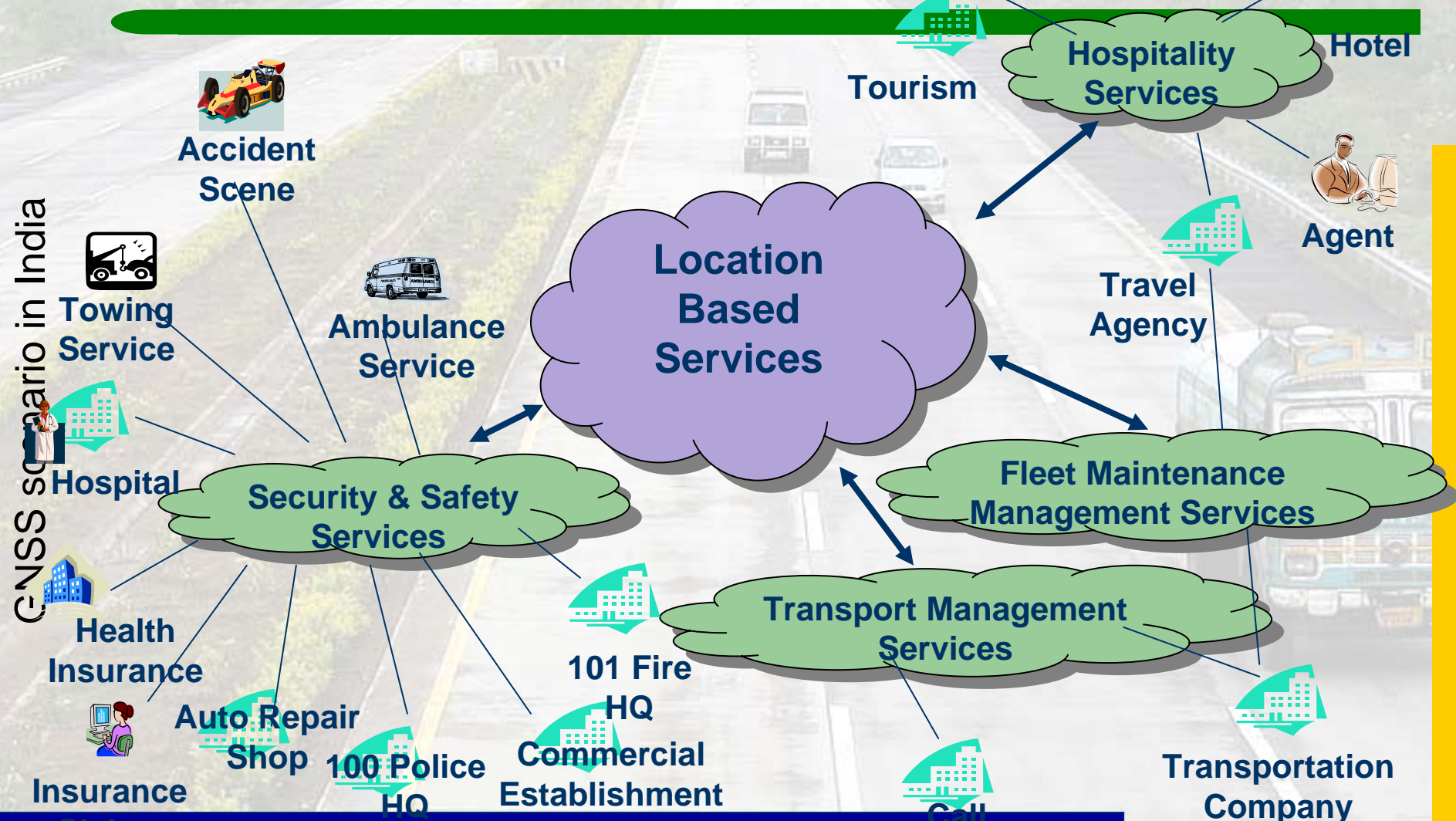


G³ Perspective

GNSS scenario in India



Location Based Services

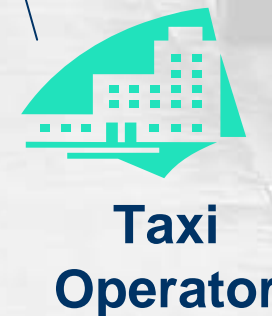
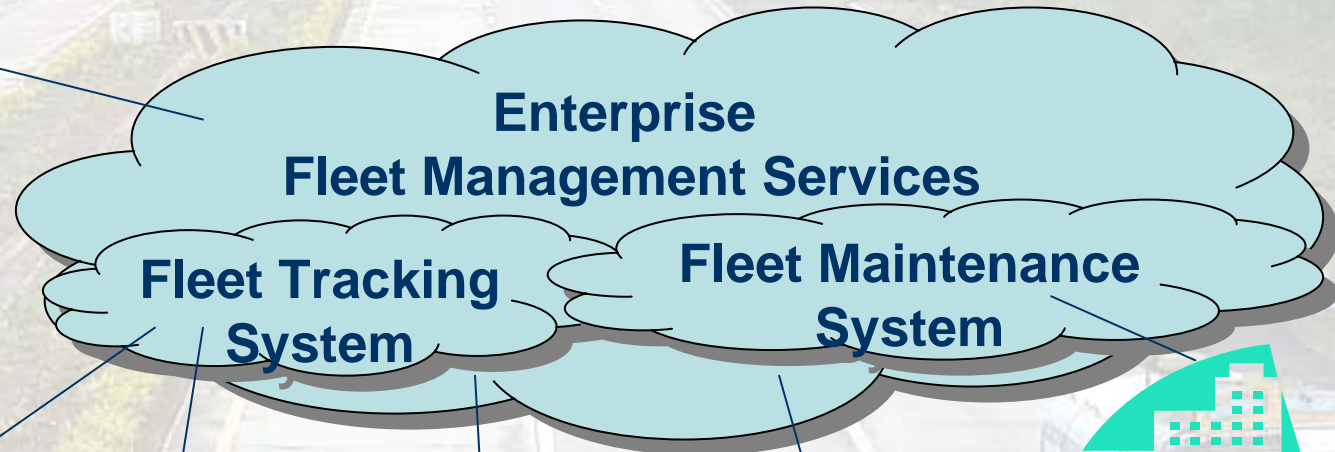


GNSS scenario in India

Location Based Services



End User



GNSS scenario in India

Location Based Services

LBS Value Chain

GNSS scenario in India



Location Based Services

LBS Architectural Functions

Positioning

- ❑ Determine spatial coordinates of a target

Spatial Analysis (GIS)

- ❑ Provide/ administer base map data: man made structures (roads, colonies) & terrain (hills, rivers)
- ❑ Manage point-of-interest data such as location of petrol stations, restaurants, malls, etc.

Location Management

- ❑ Process positioning & GIS data
- ❑ Mediate between positioning equipment and LBS infrastructure

GNSS scenario in India

Business Potential

GNSS scenario in India

- **Defence**
- **Transport (VTS/ FMS): Call centers, Crime (Police), Health (Ambulances)**
- **Municipalities (Garbage dump vehicles, Asset Management, Property taxation)**
- **Utility (data collection, fault detection)**
- **Environment (trees identification)**
- **National parks (movement of wild animals)**
- **Advertising (sign boards)**
- **Automobiles (navigation, thefts, breakdown, accidents, drivers performance)**

Business Potential

Vehicle Statistics – Growing India

GNSS scenario in India

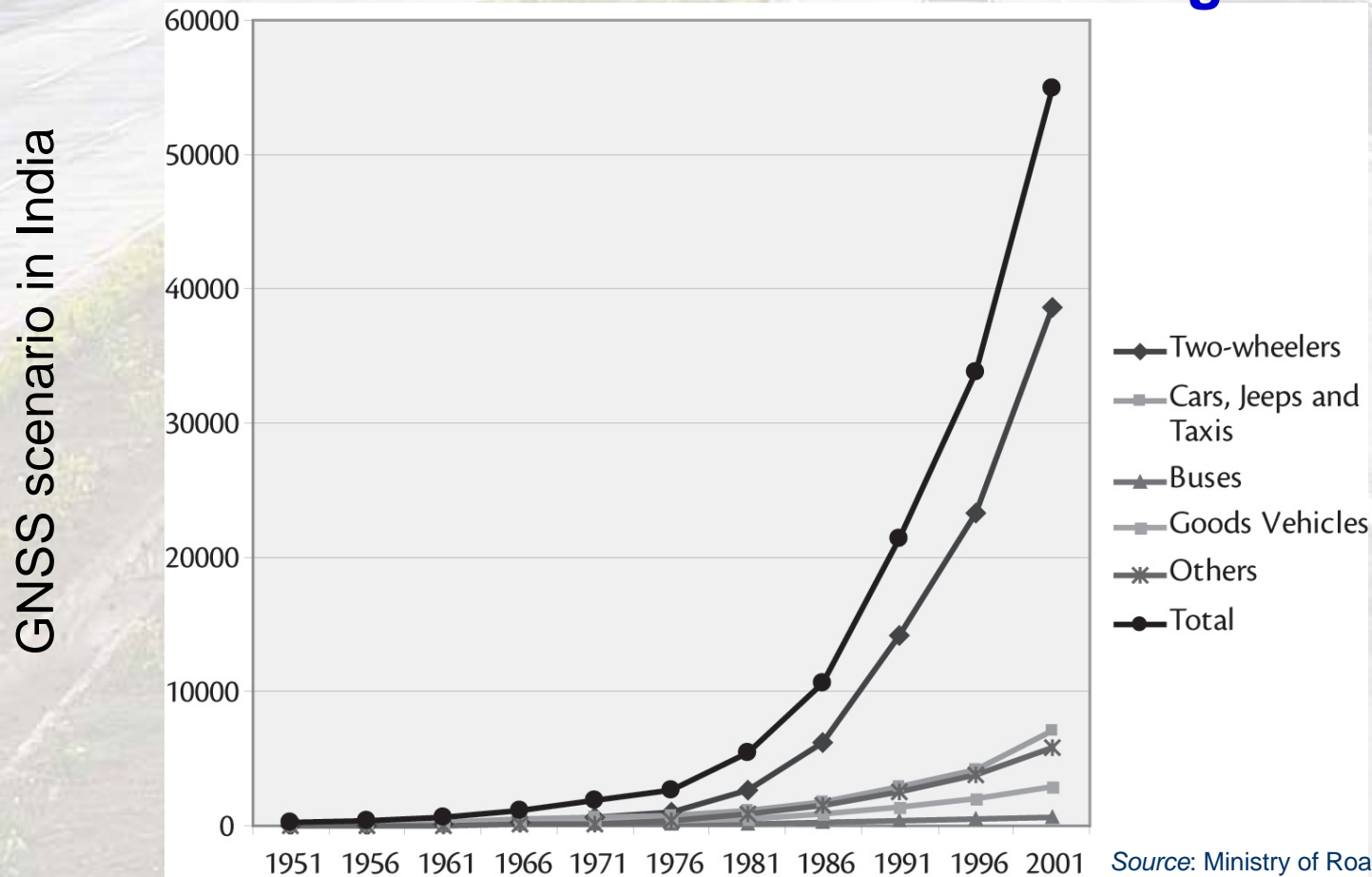
Year	All Vehicles	Cars, Jeeps and Taxis	Buses	Goods Vehicles
2000	48,857	6,143	562	2,715
2001	54,991	7,058	634	2,948
2002	58,863	7,571	659	3,045
2003	63,863	8,285	709	3,210
2004	67,454	8,987	824	3,325
2005	71,037	9,686	943	3,512

Source: Internet
 Red: Estimated

Vehicles in thousands

Business Potential

Vehicle Statistics – Growing India



Vehicles in thousands

Source: Ministry of Road Transport and Highways 2003

Business Potential

Current scale of road transport in India

- 10 million vehicles manufactured annually while **2 million four-wheelers added on the roads annually**
- 3,3 million KM road network crisscrosses whole country
- NH network (less than 2% of road network), carries about 40% of road traffic
- **3 million commercial vehicles** carry loads using the roads network

GNSS scenario in India

Business Potential

Fleet Management Services (FMS)

- **Logistics**
- **Retail & Consumer**
- **Refrigerated Cargo**
- **RMC**
- **School**
- **BPO**
- **Taxi**
- **Waste Management**
- **State Transport**
- **Railways**
- **Oil & Milk**
- **Mines**
- **Docks**
- **Marine**
- **Forest**
- **Hospital**

GNSS scenario in India

Business Potential

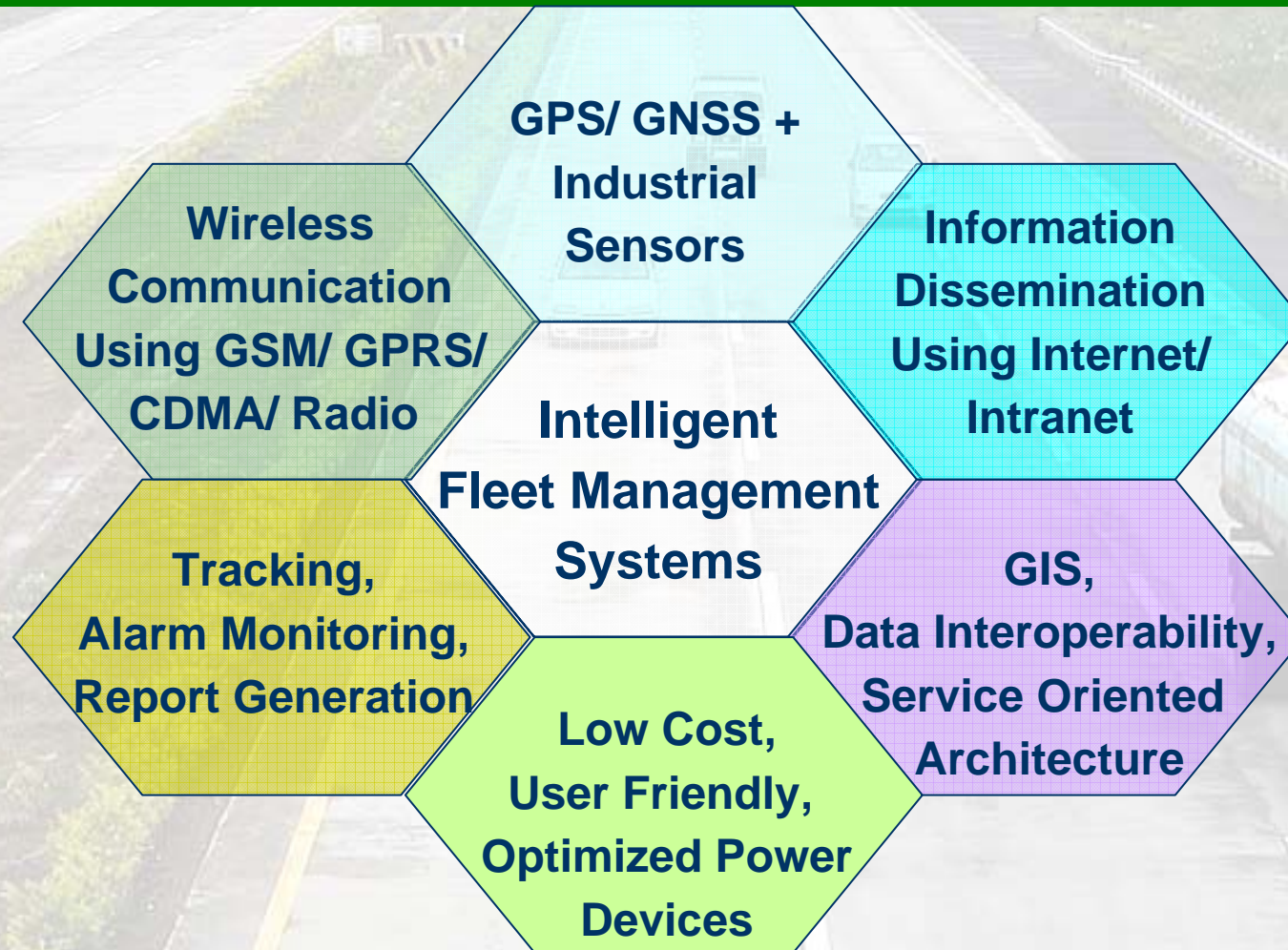
Driving parameters for use of FMS/ VTS:

- Reasonable cost
- Appropriate quality of data
- Availability of communication network
- Support for local language
- Ease of use (graphical interface)
- Voice interface (Text to speech)
- Insurance (against thefts)
- Citizen interface (concern for public safety)
- Keyboard along with joy-stick/ touch screen
- Optimal power management

GNSS scenario in India

Business Potential

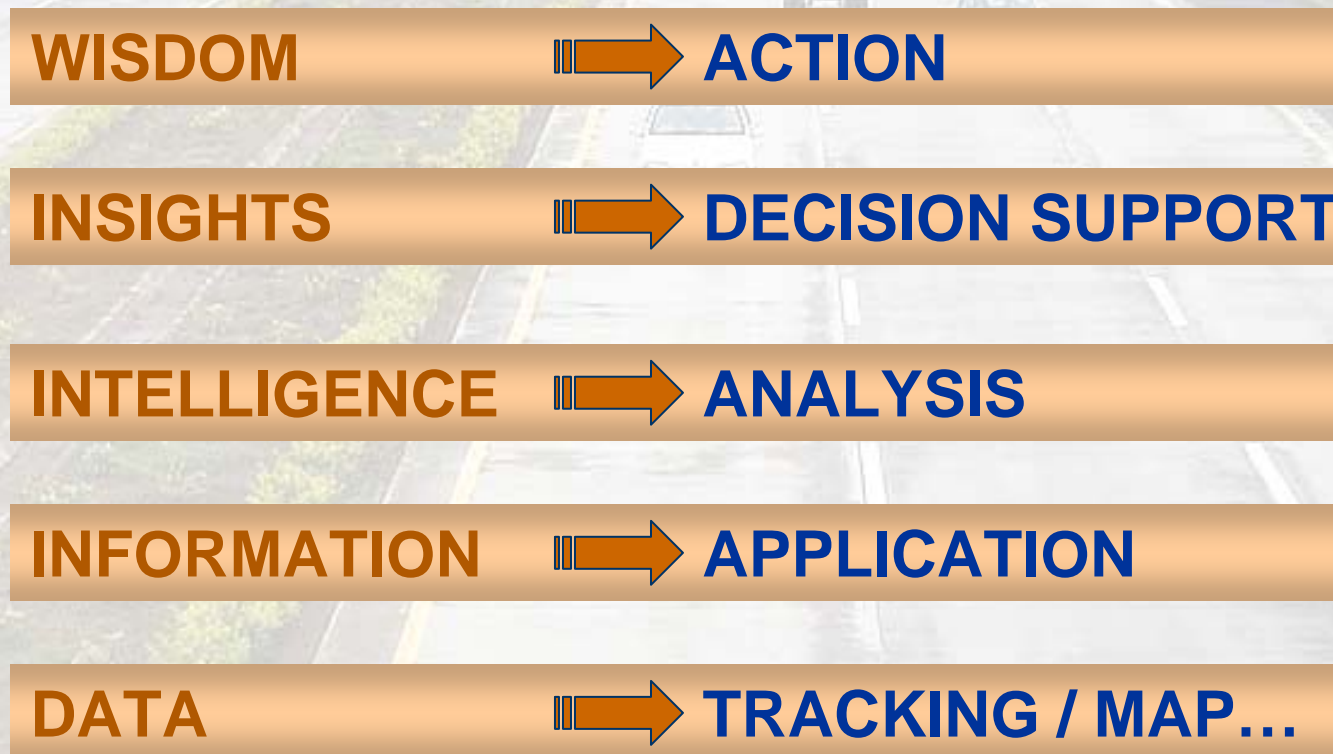
GNSS scenario in India



Business Potential

Value Delivery Model

GNSS scenario in India



Business Potential (India)

VTS

- 2005
- 2011

US\$ 06.4 Million

US\$ 78.2 Million

(Frost & Sullivan, 23.05.06)

VTS

- 2004
- 2007

Units (thousands)

15 – 20

~ 150

(Economic Times, 10.07.07)

GNSS scenario in India

Business Potential (India)

GPS & Telematics market

- 2006 - 2007 US \$ 22 millions
 - 2009 - 2010 US \$ 448 millions
- (Frost & Sullivan, 23.05.06)

Consumer LBS (2009)

- Average subscription (in US \$) 1 - 2
- Penetration (in %) 30 – 50
- Revenue (in million US \$) 300

GNSS scenario in India

Business Potential (World)

VTS

- 2005
- 2011

Million Units

040

300

(ABI Research, 21.09.06)

In-vehicle Navigation

- 2005
- 2011

Units (%age)

26

34

Revenue (%age)

16

29

Handsets (Communication)

- 2005
- 2011

Units (%age)

43

69

Revenue (%age)

09

18

GNSS scenario in India

Business Potential (World)

Location based services

- 2005 US\$ 040 millions
- 2010 US\$ 1600 millions

(Yankee Group, 06.03.07)

GPS enabled LBS Subscribers

	Units (million)	Revenue (%age)
▪ 2005	012	0.5
▪ 2011	315	9

(ABI Research, 10.05.07)

GPS enabled handsets (Communication)

	Units (million)
▪ 2010	300

(IMS Research, 25.03.07)

GNSS scenario in India

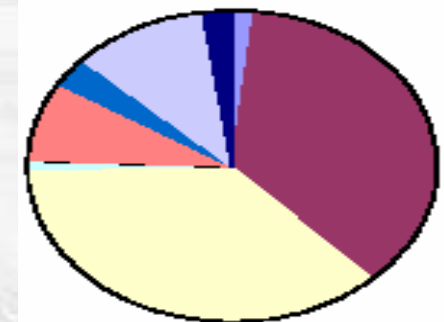
Business Potential (World)

Break down of Turnover

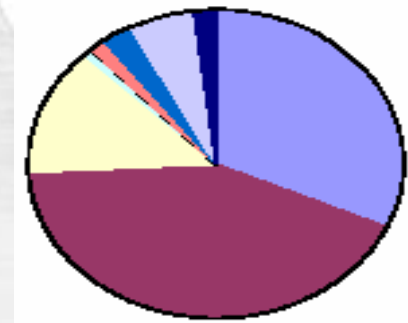
GNSS scenario in India

-  Personal mobility
-  ● Mass market vehicles
-  ● Commercial Vehicles
-  ● Aviation
-  ● Maritime
-  ● Emergency services
-  ● Surveying
-  ● Others

By 2001



By 2015



Challenges

- Majority of fleet under unorganized sector
- Market is price sensitive
- Consumer are interested in immediate ROI and direct vehicle movement control
- Consumers are not tech-savvy
- Consumers are interested in limited features
- Innovative applications/ services still awaited
- Market is awaiting suitable business model
- Higher revenues by increased data transfer
- Quality maps available over select cities only
- Migration to 3G spectrum is still awaited

GNSS scenario in India

About ASL

ASL: First Indian Company to produce GPS receivers with Military certification:

'DGQA certification for Armoured vehicles'.

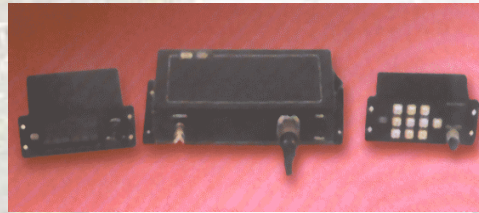
'CEMILAC certification for Military Airworthiness'.

Few thousands GPS Receivers, along with life-cycle support systems, supplied to Defence Services.

Few hundred GPS based VTS supplied for civil applications in Transport, Health & Crime

About ASL

GNSS scenario in India



About ASL

GNSS scenario in India



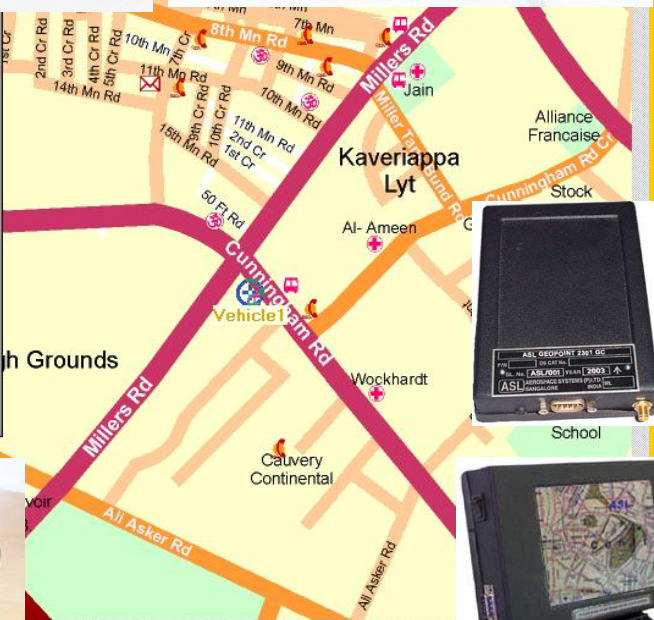
ASL GeoPoint-2206G



ASL GeoPoint-2106R

Status Unavailable...

Vehicle Id	Vehicle1
Latitude	1259.3666 N
Longitude	7735.5813 E
Altitude	928.90
Speed	0.0000
Heading	0.00
Time in UTC	53610.00
Received Time	01/16/03 11:07:54&M

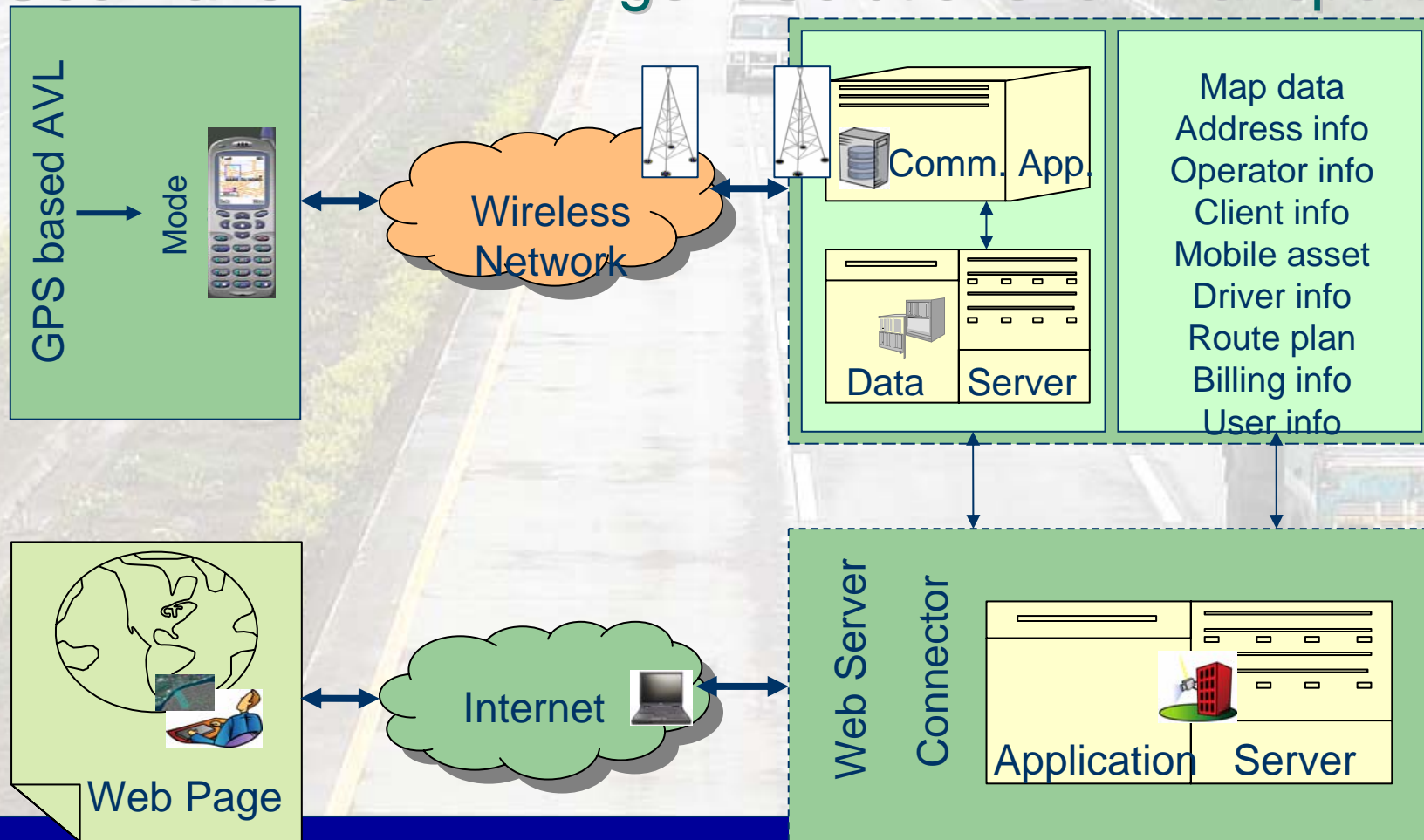


Drag Left mouse-button to pan view, Click Left to Refresh, Right to exit Kms: 0.888 x 1.322 Vh 8 visible - 5

About ASL

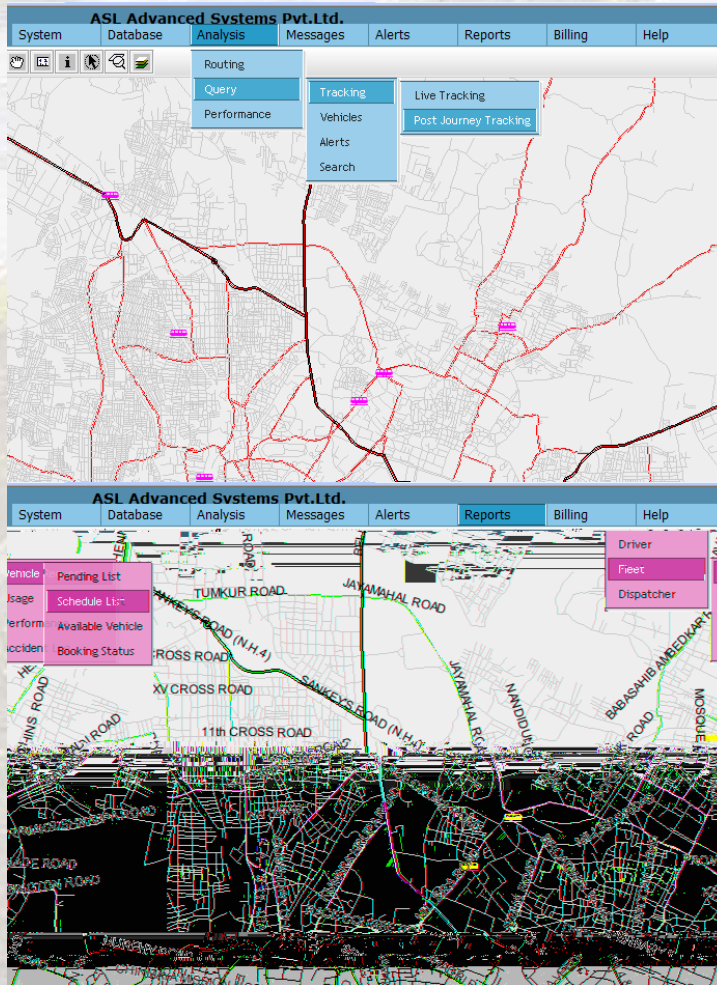
GeoTrans: Geo-Intelligent Solutions for Transport

GNSS scenario in India



About ASL

GNSS scenario in India



ASL Advanced Systems Pvt. Ltd.

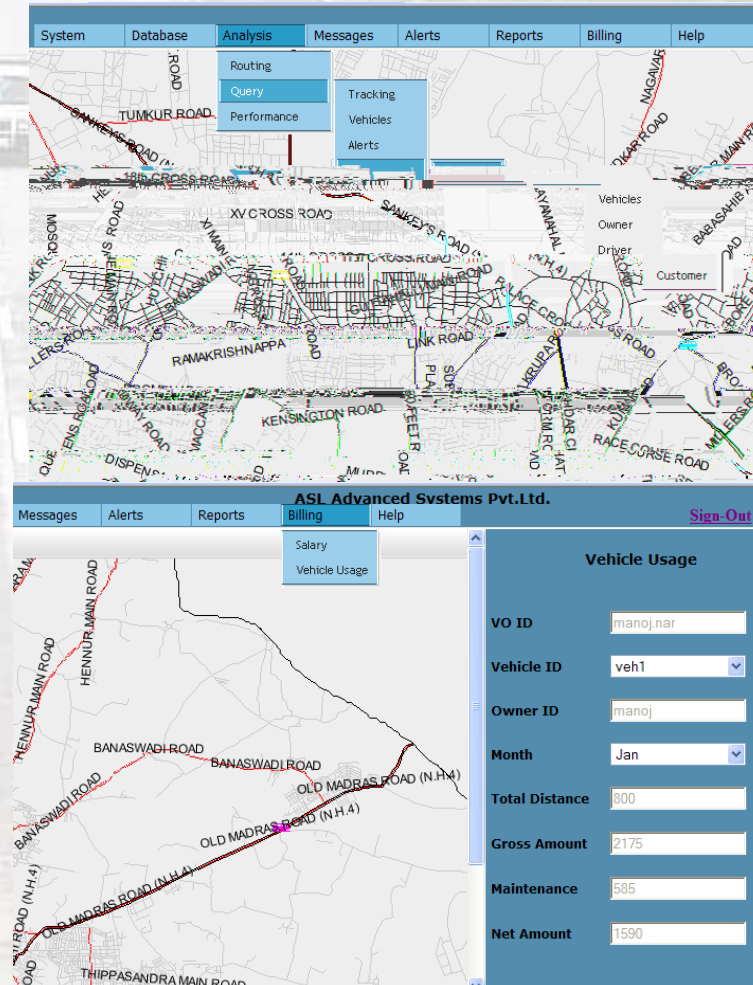
System Database Analysis Messages Alerts Reports Billing Help

- Routing
- Query
- Performance
- Tracking
 - Live Tracking
 - Post Journey Tracking
- Vehicles
- Alerts
- Search

ASL Advanced Systems Pvt. Ltd.

System Database Analysis Messages Alerts Reports Billing Help

- Vehicle Pending List
- Usage Schedule List
- Performance Available Vehicle
- Accident Booking Status
- Driver
- Fleet
- Dispatcher



ASL Advanced Systems Pvt. Ltd.

System Database Analysis Messages Alerts Reports Billing Help

- Routing
- Query
- Performance
- Tracking
 - Vehicles
 - Alerts

ASL Advanced Systems Pvt. Ltd.

Messages Alerts Reports Billing Help Sign-Out

Salary
Vehicle Usage

Vehicle Usage

VO ID: manoj nar

Vehicle ID: veh1

Owner ID: manoj

Month: Jan

Total Distance: 800

Gross Amount: 2175

Maintenance: 585

Net Amount: 1590

Concluding Remarks

- **G³ provides suitable platform to develop LBS**
- **Drivers of GNSS market:**
 - **Competitive prices of chips and receivers**
 - **Innovative packaging of VTS**
 - **Suitable business model for FMS**
 - **Mobile phones with built-in GPS**
 - **Quality & updated large scale digital maps**
 - **Aggressive marketing of VAS by carriers**
- **GNSS is transforming from 'pure navigation to also navigation'**

GNSS scenario in India



THANK YOU



Image © 2006 DigitalGlobe
© 2006 Europa Technologies

© 2006 Google