PEGASUS INTELLIGENCE

# LAGO

## 2G/GSM-3G/UMTS-4G/LTE
## Semi-Active Tactical System

The LAGO is an off-the-air tactical interception system for 2G/3G/4G GSM Cellular Networks.

The LAGO system intercepts and records voice calls, text messages (SMS) and DTMF tone from and to the target (incoming and outgoing calls) in the cell.

During a conversation, both sides (persons) are listened in excellent quality.

As the LAGO is an active system, it is proved totally transparent and undetectable neither by the mobile operator (MO) nor by the target itself. The LAGO operates in Random mode as well as in Target mode.
It can filter, track and record only the target operation.

## REAL TIME MONITORING AND CONTROL

- IMSI/IMEI CATCHER ABILITY
- A5.1, A5.2 AND A5.3 ENCRYPTION SUPPORT
- UNLIMITED NUMBER OF REGISTRED TARGETS
- FULL 2G (850, 900, 1800, 1900) SUPPORT
- BOTH SIDE OF CONVERSATION (FULL DUPLEX)
- ADJUSTABLE POWER OUTPUT
- PROPRIETARY WIRELESS TECHNOLOGY
- READY FOR USE BOTH AS A STATIONARY (VEHICLE OR OFFICE) AND AS FULLY PORTABLE SYSTEM
- 3G (850, 900, 1700, 1900, 2100) BTS OR JAMMER
- 4G (700, 1800, 2100, 2600 OR 700, 850, 1700, 1900) BTS OR JAMMERS
- COMPACT AND TRANSPORTABLE
- EASY TO USE / FRIENDLY GUI
- GPS POSITIONING
- SELECTIVE JAMMING OPTION
- FULLY TRANSPORENT
- OSINT EMBEDDED FEATURE

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# LAGO

COMPLETELY INDEPENDENT,
SELF-HOSTED & MANAGED,
ENCRYPTED VOICE & TEXT NETWORK

## ADVANTAGES

- Intercepts and records all outgoing/incoming calls, voice, supplementary service and SMS
- All target calls are registered in the Mobile Operator (MO) billing systems
- Pass the caller ID to the target mobile phone.
- All traffic (voice and data) is fully encrypted in the air.
- Multi MO functionality
- Easy change of Mobile Operator by changing a parameter only
- Interception distance up to 1Km,
- Interception operation starts in less than 15 seconds
- Correlation tools to detect targets
- Analysis tools to search for events
- VPN configuration allows operation in different locations and common control center.
- Operate with GSM DF system – Remote silent activation of a target
- Remote operation – controlling of interception mission via Internet
- Target communication manipulation: Block, redirect or change information to/from the target. Change SMS content, Voice call manipulation
- Tracking cell information
- Accurate GPS target positioning using combination of both mobile phone and BTS data
- IMSI/IMEI identity correlation features
- Public Number (PN) detection
- Distant microphone activation
- Real-time database storage
- One GUI interface for full system operation and control
- Special priority algorithm forcing mobile phones to make a fast registration on the system

## OPTIONS AND EXTRA FEATURES

**Power Amplifier:** The LAGO can be coupled with a special Power Amplifier and very high gain antenna increasing its range of operation to up to 2 Km (depending on the topography).

**Jamming Unit:** For some applications, there is an option to order our High Power Single band 3G/4G jammer instead of 3G/4G IMSI catcher unit to force subscribers cell phones to downgrade to the frequencies covered by the system.

**Target Direction Finder:** Vehicular DF subsystem

**Target Direction Finder:** Homing system

**Wireless Split Operation:** controlling remote interception points via special wireless communication units

**Mobile casing:** Fully portable installation with wireless connection, batteries and antennas in one compact back-pack case

# LAGO - OVERVIEW

## LAGO PURPOSE

• Real-time detecting of 2G, 3G and 4G GSM-standard mobile phones, located within the zone controlled by the System,
• Collecting the information from the mobile phones in the area
• Downgrading the phones using 3G/UMTS and 4G/LTE standards to 2G/GSM operation mode to provide full interception
• Registering and recording all traffic (incoming and outgoing communications) from these mobile phones
• Manipulating the state of mobile phones, which have been registered by the system.
• The System operates in stealth mode in GSM networks, which use various encoding types (A5.2, A5.1, A5.3)

## LAGO SYSTEM SUPPORTS

• Defining mobile phone key parameters - IMSI, IMEI, Kc, Public Number, etc., that are required for System operation.
• Full mobile phone incoming and outgoing traffic control within the System's reach zone;
• Manipulating the state of mobile phones, including the possibility of identifying the location of a mobile station (target) by activating its GPS receiver and remote silent microphone activation
• Calls and SMS from and to target using any identity

## LAGO RANGE

The default LAGO system configuration supports up to 1 Km operation and it can be easily increased up to 2 Km using long-range option. The actual system range will be depending on the environment where it is being used. Typically, in a heavily built-up urban area the range will be about 150 meters that is because BTS in an urban area covers small area influence on the real capture area of the LAGO system. In more open areas where the cell coverage area is larger the actual interception distances.

# LAGO SPECIAL FEATURES

• The LAGO system can perform several manipulations to provide more information about the targets.

o Enable/disable incoming or outgoing calls / SMS

o Send SMS or make a call to a target or to other party via the system

o Change the content of the SMS before it goes to the target

o And more

• The system can force the activation and the transmission of the target phone to feed the Direction Finder (DF) system

• Early Kc evaluation. Helps to shorten the authentication call process.

• Force the target mobile phone to a certain ARFCN traffic channel to correlate with DF system

• The system shows constant indications of the reception level from the Mobile subscriber as well as constant level display of the BTS.

• PLMN detection – The LAGO includes a very important function that is called "Get Public number". It detects the Mobile Subscriber telephone number (PLMN number) by capture its number when sending the Caller ID over hidden incoming call.

• Tracking and analysis tools by saving subscribers lists that include fade out subscribers, rejected subscribers and “target presence " subscriber lists,

• Target history tracking list - to view the information stored in the database on a subscriber with IMSI identification

• Backup utilities - Convert Voice recording to standard .WAV files to be recorded on removable storage media. Database can be exported due to Microsoft Access MDB format.

• Intelligence Analysis functions helps the operator to search for specific conversation or SMS. The operator can apply many filters to search for an event. SQL query language also provide means to search for events
Easy way to detect if Target replaces SIM cards. Each HLR list displays the IMSI (SIM ID number) and the IMEI (Equipment Id number). Using the correlation function the operator finds the changes of new IMSI/IMEI combinations.

• The system applies transmission level control to determine the TX level of the BTS.

• Intelligence gathering when the target does not participate in incoming/outgoing calls (call standby).

• Quick Mobile Operator change. The operator may change to a new operator by changing the LAI (MCC + MNC) in the system BTS parameters setup.

• VPN connectivity with AS that will be located in area which supports open mode operation

• Connection to internal A5.1 decipher, Optional External server (not include in the price) can provide service to several systems.

# LAGO – OPERATING MODES

## "CATCHER" MODE

• IMSI and IMEI catching. (Secretly obtaining mobile station main identification parameters (IMSI, IMEI, TMSI, Kc etc.).

• Detection, controlling of mobile stations entering and leaving, turning the power on and off in the System's coverage zone.

• Preventing operation of a certain mobile station (Target) or of station groups, which are in the System's coverage zone.

The System initializes the operation of the base station. Thus, one cell is formed (further - internal network) for which the MCC, MNC and ARFCN values will correspond to the parameters of a cellular communication operator, operating in a given district (further - external network), and the LAC is set to a different value from what is used in the real network. The mobile phones, which are within its operation radius (further - subscribers), will acknowledge activation of a strong channel and will start the registration procedure. They will transmit to the System their IMSI, IMEI, TMSI (received in real GSM networks), class mark, KCN. The program's "BTS control" window will display a list of registered subscribers (called in the system - HLR). For the subscribers, registration in the internal network does not differ from registration in the external network.

## "INTERCEPTOR" MODE

Maintaining full control over mobile station incoming and outgoing traffic within the System's coverage zone.

Two control modes:
1. Random mode Interception (all mobile stations)- Capture and record all incoming and outgoing traffic within the System's coverage zone;

2. Tracking mode Interception – IMSI and/or IMEI (only targets)
The System supports subscriber (target) selection by the known IMSI and/or IMEI identifiers and also has the given identifiers search tools based on the registered subscribers' statistical list processing results.
The System operates in stealth mode and the mobile phone users cannot detect it. The system does not create interference for external mobile GSM networks.

## "TARGET CORRELATION" MODE

The "Target Correlation" function helps to identify the Targets specific parameters from a list of all subscribers that were registered in the system.
This function is intended to search for the target's IMSI/IMEI identifiers with the purpose of their subsequent use as selection parameters. This technique is based on comparing the lists of subscribers, registered in the internal network, obtained from various sources (at different addresses) during various time periods

## "LOCAL NETWORK" MODE

The System supports mobile station operation (restoring the radio coverage zone) in critical situations (natural or technologic disasters).
Hostage situations – providing search, detection and possible contact with the GSM mobile station owners in disaster areas, accidents (supporting exclusive System's operator's contact with pre-determined mobile stations).
It can be used as a local area network for a small office.

## "DETECTION"

Supports detection by the usual (standard) radio control resources of the location of a given mobile station, located within the System's coverage zone, by concealed activation of the mobile station's transmitter.

## LAGO – STRUCTURE

The following units may be included with the System:

- BTS cloning system includes:
  - o 2G UNIT, with single or dual GSM frequency band transceivers (depends on configuration) and two channels of mobile stations for Kc calculation in one enclosure (with internal antennas and wireless unit as an option);
  - o 3G and 4G UNITS, BTS or Jammers - to downgrade communication to 2G (GSM).
  - o Back-pack bag unit include internal antennas, wireless transmitted and batteries for 2-3 hours of operation.

- Cloning target's channels - to interact with the external GSM network on behalf of the subscriber, registered in the internal network.
  - o A complete set of 4 active stations (optional extra 4 channels)

- SYSTEM CONTROLLER unit - to provide power and communication to the BTS components of the system includes:
  - o Power supply systems
  - o Network components
  - o Wireless communication transmitters
  - o A 5.1 decipher unit (as option)

- LAPTOP PC to perform the control, storage, information production and analysis tools. The Notebook Pc is handling the real time deciphering function.

A notebook with the corresponding software (PC)
  - o Lenovo ThinkPad laptop
  - o Intel I7 quad-core processor
  - o 128GB SSD hard disk
  - o 4 GB RAM;

** Laptop model can be changed due to availability

- External Directional antenna for the GSM frequency multi band (optional)

- A set of connection cables

## LAGO – VEHICLE INSTALLATION MODE

The system will be house in a rack specially design for quick vehicle installation.

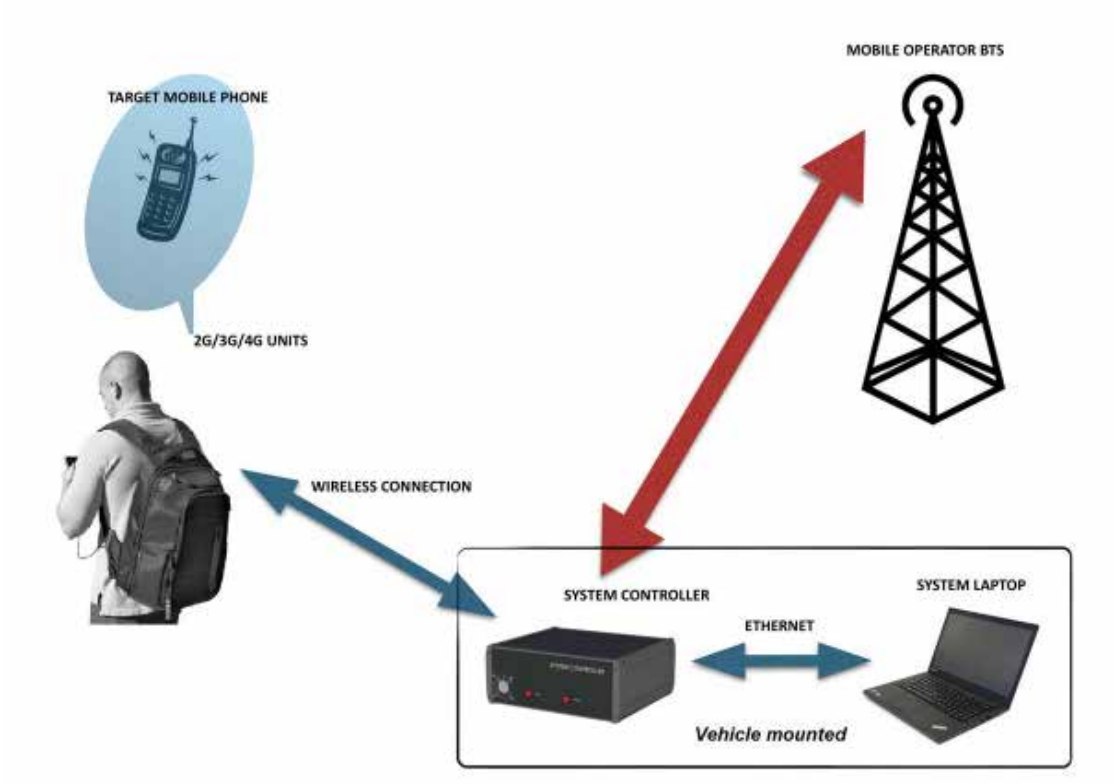
# LAGO – WIRELESS MODE

## INCREASE THE RANGE

The range of the system is defined between the system and the target. The range is between 150 meters in town to 1km in rural areas and up to 2km with long distance option.
With wireless option the range will be defined by the sum of the distance between the target and the battery operate 2G/3G/4G UNITS and the distance between the 2G/3G/4G UNITS to the SYSTEM CONTROLLER with connected system Laptop. So the range may be increase to 600 meters in town to much more even 5-10 km in LOS (Line Of Sight – 10Km is with high power wireless transmitter, directional antennas that are installed on towers for LOS).

## PENETRATE BUILDINGS

With the wireless option we can make interception inside buildings while the recording system will be in a van out of the building.



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## SPECIFICATIONS

| | |
|---|---|
| Number of channels | 4 /6/8/12/18 or more full duplex channels |
| Kc calculation | separate channels for prior calculation. |
| Interception direction | Incoming and outgoing calls |
| Interception content | Voice |
| | SMS |
| | SS-message |
| 2G Frequency Bands | 900/1800 MHz or 850 /1900MHz |
| 3G Frequency Bands | 850 / 900 / 1700 / 1900 / 2100 MHz |
| 4G Frequency Bands | 700, 1800, 2100, 2600 MHz or 700, 850, 1700, 1900 MHz |
| Operation modes | IMSI/IMEI catching |
| | Random interception mode |
| | Tracking Target mode |
| | Target PLMN (phone number) detection |
| | "Local Network" |
| | Target correlation mode |
| | Kc evaluation |
| Interception setup time | Within 10-20 seconds |
| BTS information | LAC |
| | ARFCN |
| | Rx level |
| | MCC MNC |
| Interception method | Fully transparent active |
| Tones interception | DTMF |
| DTMF | Real time decipher |
| Real time decipher | Available few models: |
| A5.1 decipher | - Different average decipher time |
| | - Less than 1 sec real time decipher |
| | - VPN connectivity to share resource |
| | Voice and data recording |
| Voice and data recording | 120 G Byte hard disk or more |
| 120 G Byte hard disk or more | Target filter |
| Target filter | IMSI, IMEI |
| IMSI, IMEI | PLMN number detection |
| PLMN number detection | Manual or Automatic |

# SPECIFICATIONS

| | |
|---|---|
| Event real time status | Incoming/Outgoing call |
| | Emergency call |
| | Incoming/Outgoing SMS |
| | SS operation |
| | IMSI attach |
| | Power off |
| | Registration period timer |
| | Periodic /Normal Location Update |
| HLR display | Local subscriber |
| | TACS – Phone model presentation |
| | Fade out Subscribers |
| | Rejected subscribers |
| TACS (IMEI) support | More than 20,000 cell phone models are supported |
| Display design | Color change for each message type |
| Protocol filter | Yes |
| Processing software | Correlation target lists |
| | Detecting SIM replacements |
| Database | Microsoft Access DB |
| Query method | SQL queries |
| Search parameters by | date, time, IMSI, IMEI, TMSI, |
| | Target name |
| | location LAC |
| | DTMF |
| | SMS word content, |
| | Partial number using * and ? |
| Voice features | Target detection Alarm |
| | Stereo listening for both parties of conversation |
| | Automatic voice activation |
| | Possible to listen to one speaker side |
| Replacing Operator | Change MCC +MNC parameters |
| Connectivity to DF system | Yes |
| Silent call | Yes |
| Test Presence | Yes |

# SPECIFICATIONS

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|---|---|
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| | Possible to listen to one speaker side |
| Replacing Operator | Change MCC +MNC parameters |
| Connectivity to DF system | Yes |
| Silent call | Yes |
| Test Presence | Yes |

# SPECIFICATIONS

| | |
|---|---|
| Call manipulation | Enable/disable incoming or outgoing calls |
| | Enable/disable incoming or outgoing SMS |
| | Change incoming/outgoing call direction |
| | Send SMS to a target or to other party via the system |
| | Make a call to a target / other party via the system |
| | Change content of SMS before it goes to the target |
| | Block Supplementary Services |
| Transmission Power | 4/10 Watts |
| | 100 Watt high power (optional) |
| Power TX control | Yes |
| AC Power supply | 115/230V AC 47 Hz to 63 Hz |
| DC Power supply | 10 – 32 VDC– customer request |
| Batteries | Internal in the back-pack |
| Power Consumption | Total of 350 watts for basic configuration |
| Networking | LAN cable |
| | VPN connectivity |
| Wireless communication | Proprietary optional |
| | - Increase distance up to 1000 meters in urban |
| | - Penetrate buildings |
| | - Increase distance to 5000 meters out of town –special model) |
| | - Field complex scenario design. |
| Internal Directional Antenna | GSM Multi Band |
| | 6 dBi @800-900MHz ,8 dBi @1700-2600MHz |
| External Directional Antenna | 8 dBi @800-900MHz ,12 dBi @1700-2600MHz |
| External power amplifier | 100 Watt - optional |
| Directional high power/high gain | Long distance Optional |
| 3G/4G option | 120 watts high power long distance low cost Jammer to capture 3G/4G phones in 3G/4G networks |

# LAGO DF – VEHICULAR DIRECTION FINDER
(OPTIONAL)

The LAGO DF adds both a direction finding and a tracking vehicle GPS location capability to existing LAGO basic GSM phone interception systems. The whole system fits into a single case and can be deployed on any vehicle in less than ten minutes.

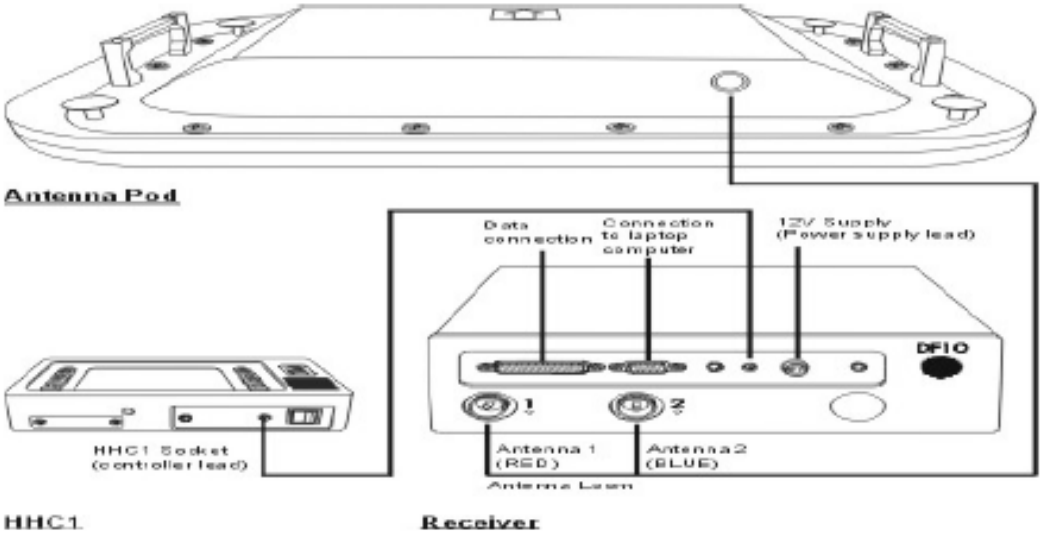
Extremes of performance of mobile tracking have always required sophisticated equipment and highly skilled operators. The LAGO DF offers simplicity of deployment and use whilst maintaining the range and sensitivity of more complex and expensive equipment. The LAGO DF has been designed to offer the simplest dual band GSM cellular phone location solution available on the market today.

## FEATURES

- Installed and ready to use in under ten minutes
- Single page controller display shows all tracking information
- Audible tone varies according to range for ease of use
- Digital signal processing removes need for operator fine tuning and improves sensitivity
- Data interface allows the GPS position of the tracking vehicle and the direction to the target to be displayed by Director mapping software.
- Suitable for mobile deployment & operation
- Audible tone changes to indicate GSM lock.

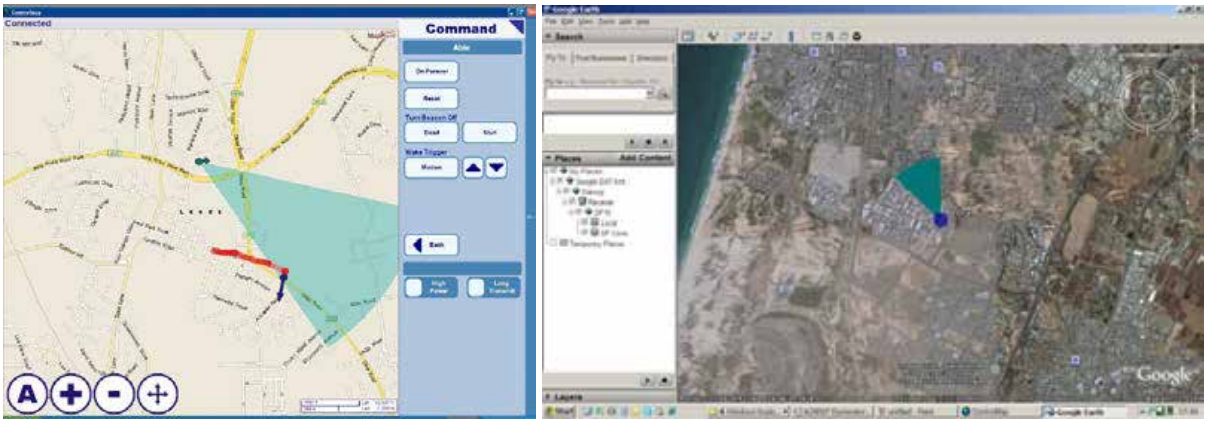
The LAGO DF add-on option comprises three major components:

- Antenna pod
- Receiver
- Hand held controller



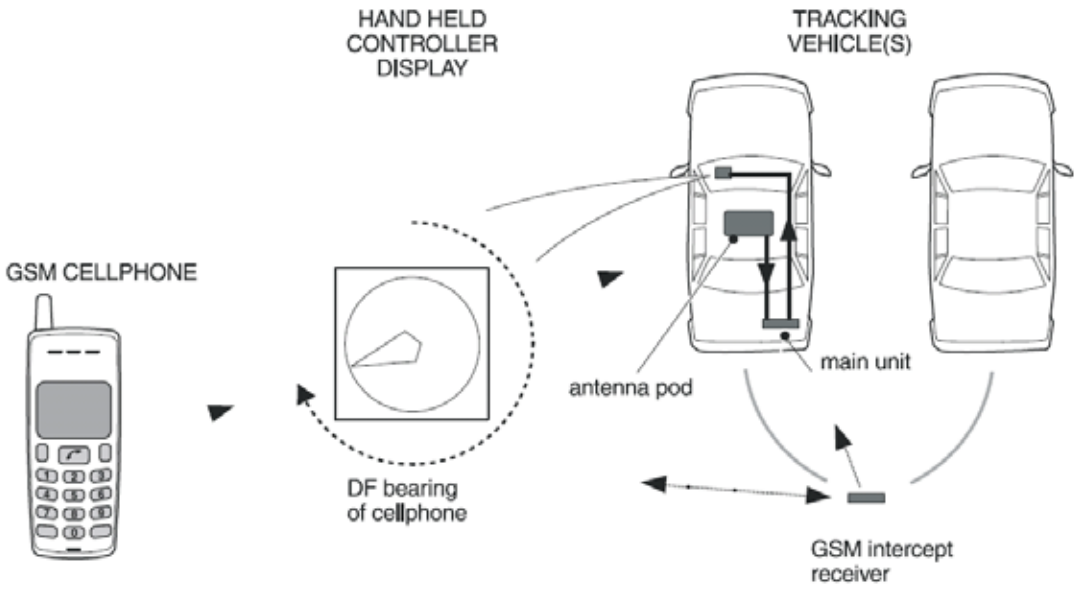
# GPS MAPPING
(OPTIONAL)

Vehicle based mapping application design with large buttons for optional touch screen use. It displays the local and the target position with LAGO DF cone when available. It also enables easy interface with Google earth maps and images.




## OPERATION

The method of operation is based on two vehicles. First vehicle with the interception system that forces the target phone to send continues signal transmission. The second vehicle is deployed with the LAGO DF components. The direction to target is displayed as a compass pointer and the relative signal strength is shown as a bar graph and numerically. The audio tone increases in frequency as LAGO DF gets closer to the target giving a clear warning of a close encounter.



# HOMING DEVICE GSM FINDER(
OPTIONAL)

- Indoor direction finder
- Small and light weight
- Support 2G 850/900/1800/1900
- Rechargeable batteries
- Sound and visual indication