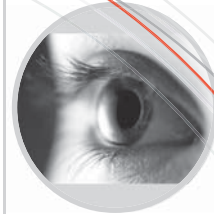
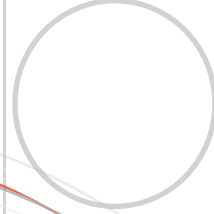


# Product Information



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**with complete confidence.**

# Portable Monitoring Systems

Presentation

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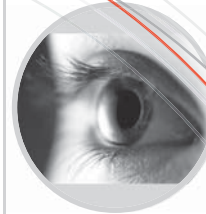
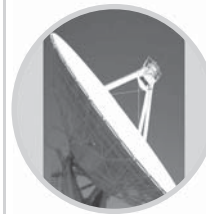
## Mobile and portable Monitoring Systems for:

- GSM active on air monitoring
- GSM passive on air monitoring
- GSM locating systems
- IP Monitoring
- Satellite interception for INMARSAT & Thuraya



Valuable & powerful add on application to a central Monitoring Center (e.g. Siemens, Atis, etc.)

# Product Information



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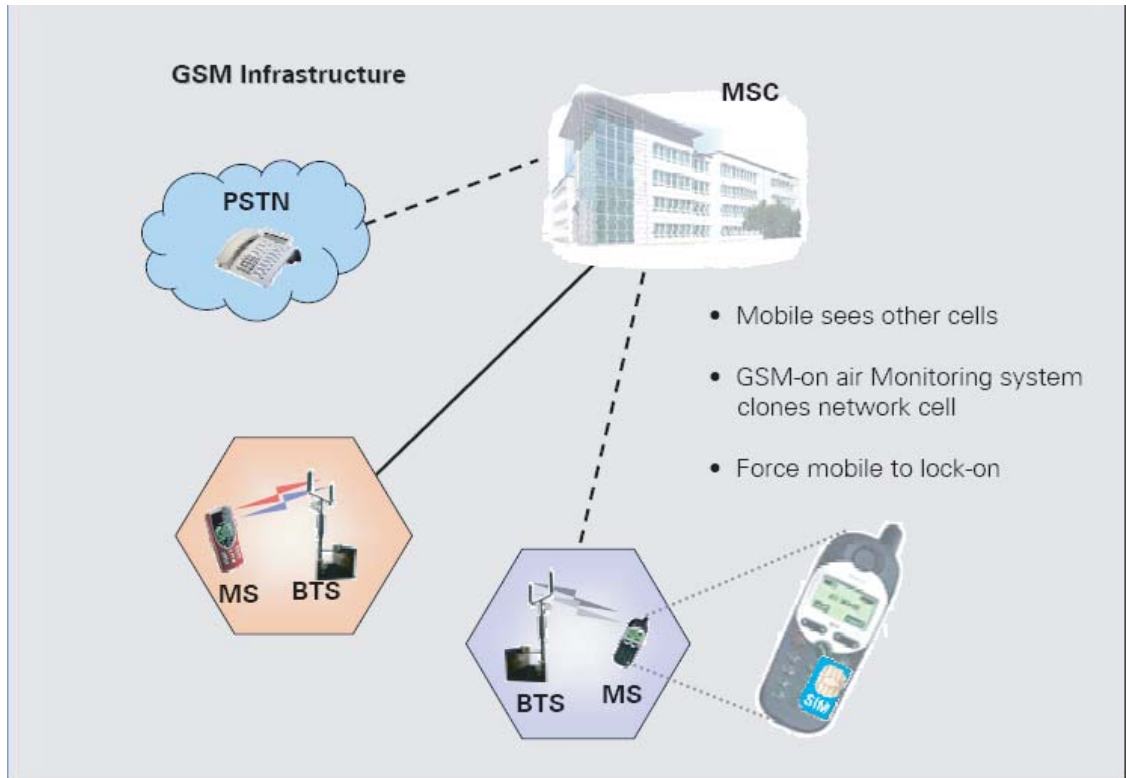
# Active GSM "on air"

Monitoring Systems - Presentation

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## GSM Monitoring "on air"



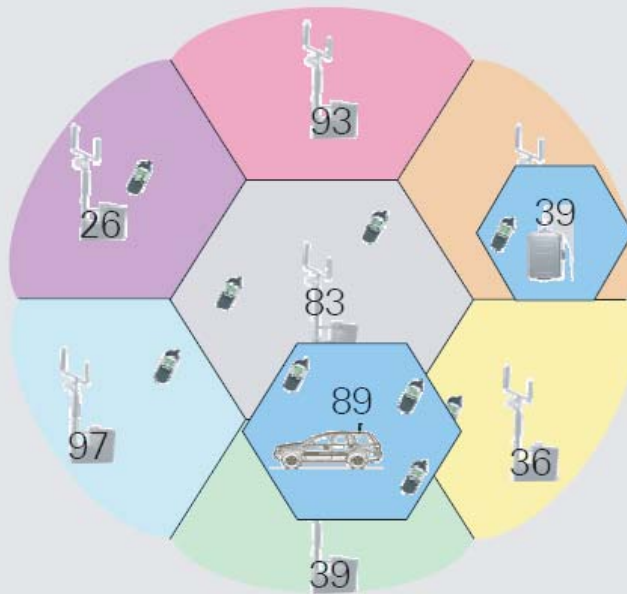
### Situation at the Radio Link

- Telephone number is never transmitted
- IMSI and IMEI only available during log on
- Temporary IMSI for subscriber anonymity (TIMSI)
- No access to network providers internal databases
- Ciphering
- Frequency hopping

**Once identity known other interception systems can be used for long-term monitoring**

Active GSM Monitoring "on air"

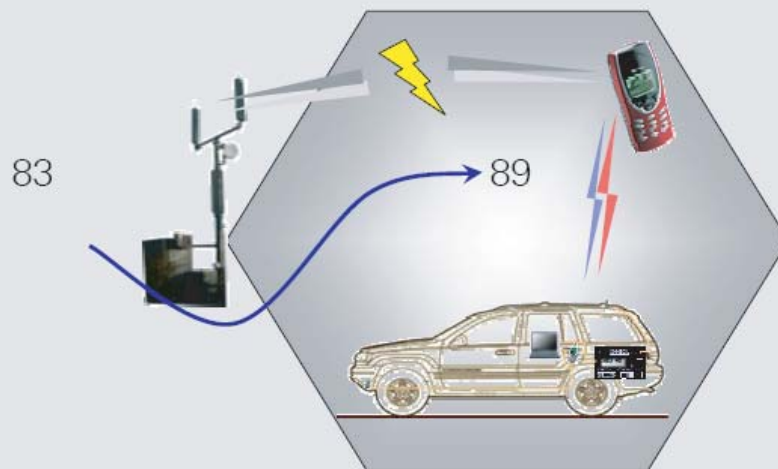
Virtual Base Station - VBTS "Man in the Middle"



- For all GSM nets
- Worldwide
- GSM standard
- One SIM card
- Adapted to the environment

Log on to active on air monitoring system, (900 & 1800 MHz)

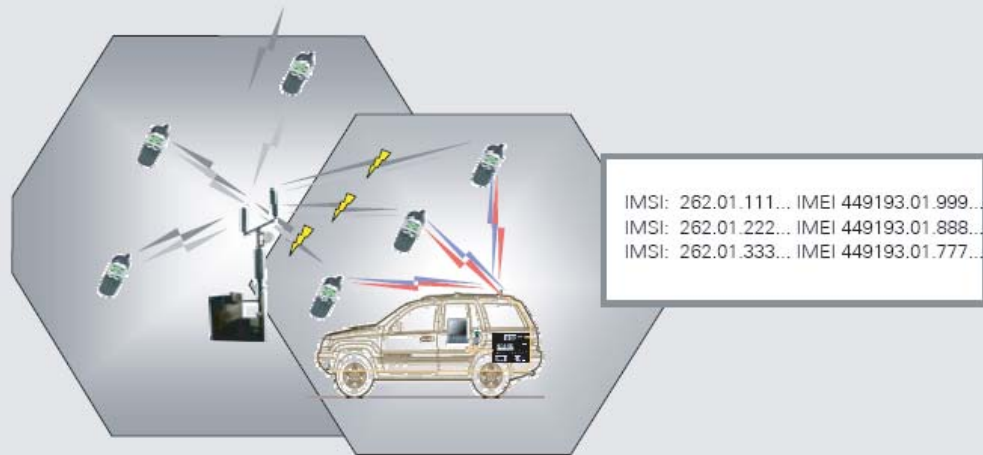
The virtual Basestation is for the target phone more attractive than the "real" Basestation



## Active GSM Monitoring "on air"

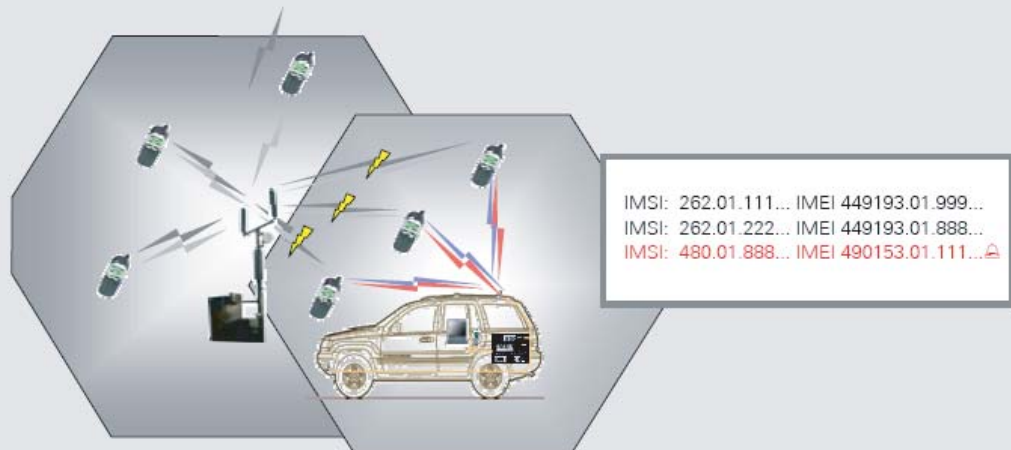
### Scan Mode

- Subscribers in VBTS area log on and their IMSI and IMEI are stored
- All phones which are of non interest are sent back to the original network after data evaluation



### Search Mode

- Search for dedicated IMSI and / or IMEI among all subscribers logged on VBTS
- Dedicated subscriber remain logged on, all other subscribers are sent back to the original network

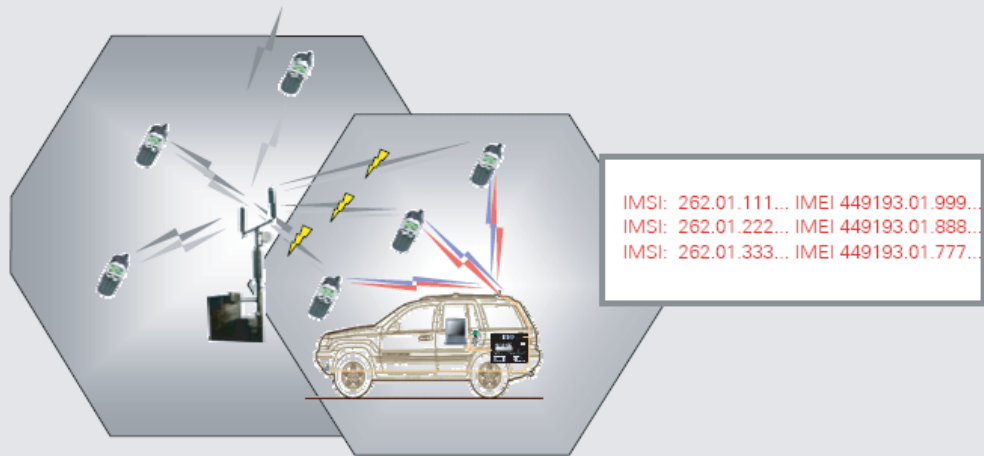


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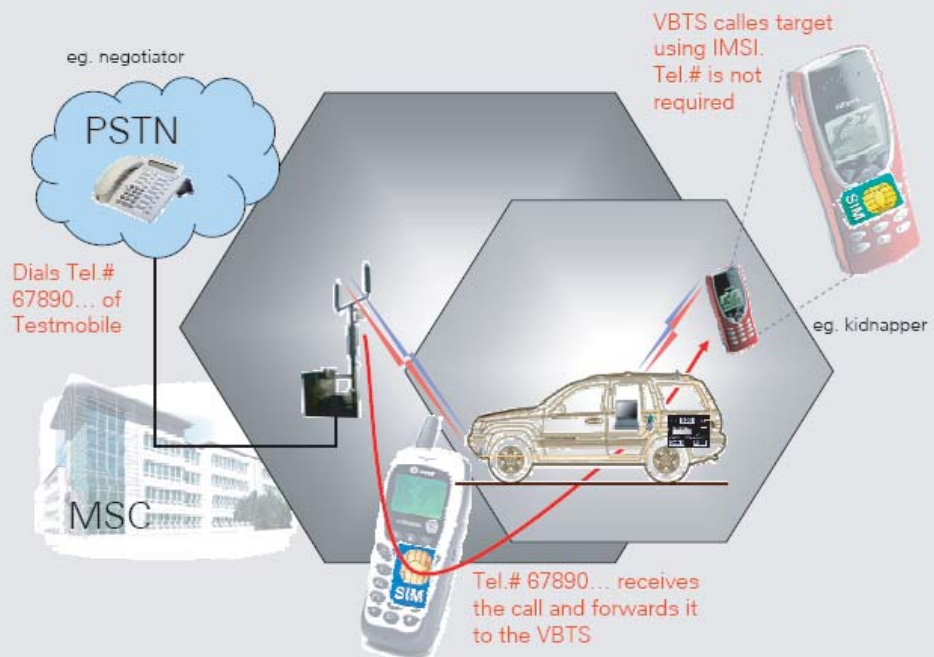
## Active GSM Monitoring "on air"

### Jam Mode / Deny Mode

- All subscribers logged on VBTS stay locked
- Own subscribers can be excluded via job list
- Jam selected phones by sending 'special software code'
- Drain the battery of the target phone



### Call Monitoring via call forwarding



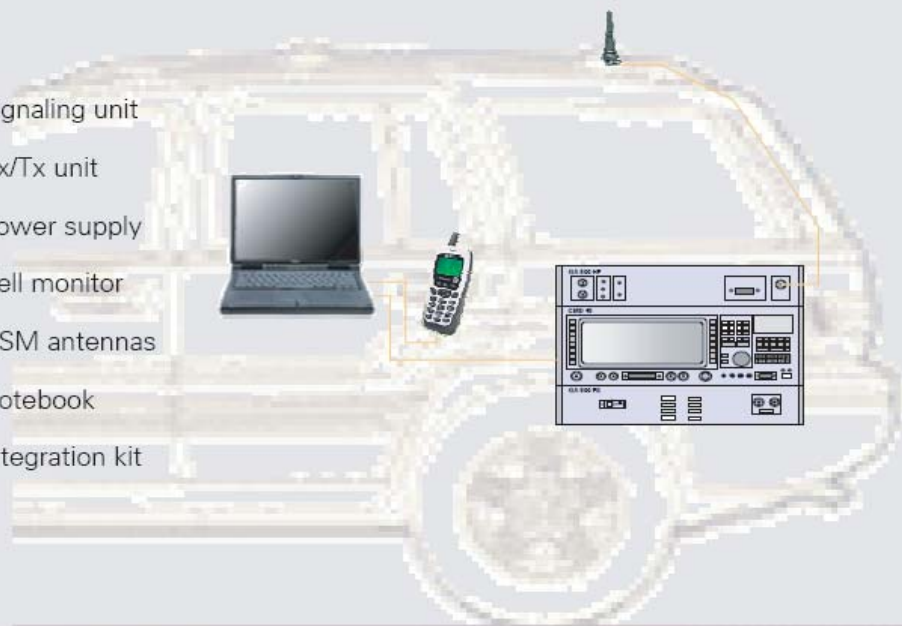
## Active GSM Monitoring "on air"

### Additional Options:

- Log on to GPRS Mobiles
- Faked calls & SMS
- Database evaluation (alarm list, search list, frequency list, etc.), assigning data to target
- GPS, store GPS data to Database
- Installation of system into car or as mobile station (case)
- Remote control via WLAN with Laptop or PDA
- Direction Finder portable/mobile or installed in a car

### Car Integration

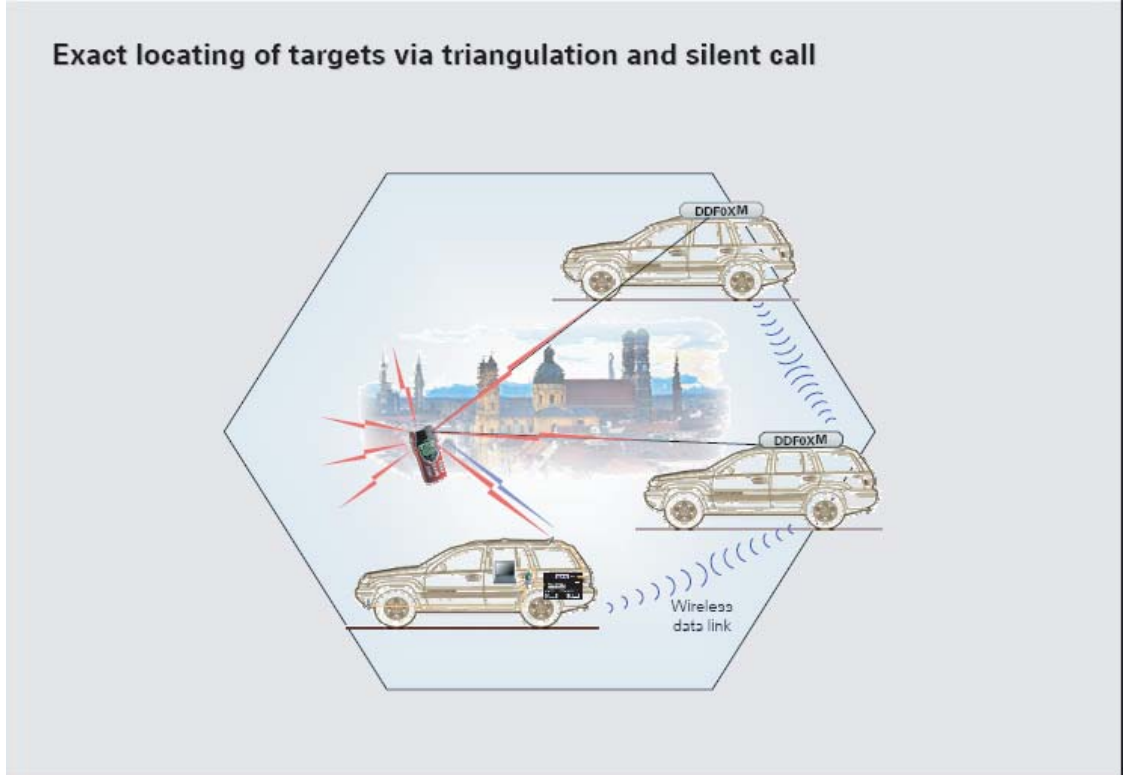
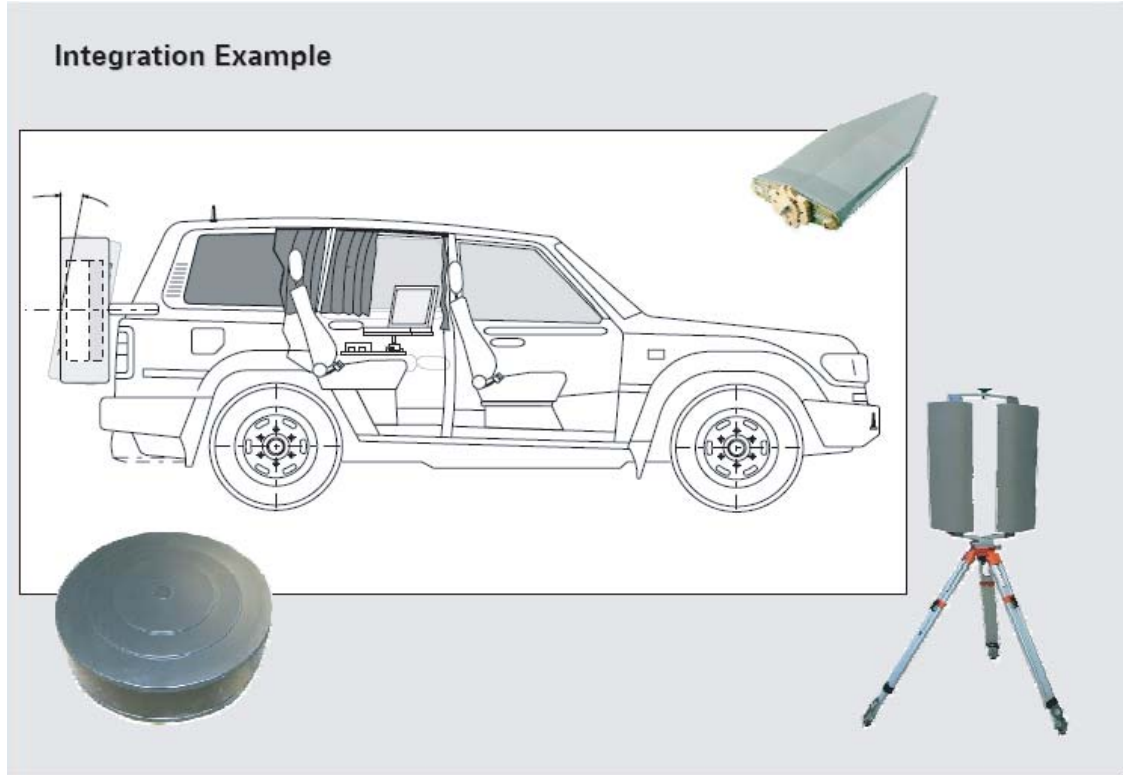
- Signaling unit
- Rx/Tx unit
- Power supply
- Cell monitor
- GSM antennas
- Notebook
- Integration kit





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### Active GSM Monitoring "on air"



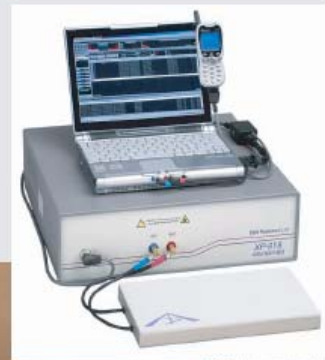
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### Active GSM Monitoring "on air"

Homing of targets via silent call with mobile finders



Handheld DF system giving audio and visual target indication



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### Active GSM Monitoring "on air"



## Active GSM Monitoring "on air"

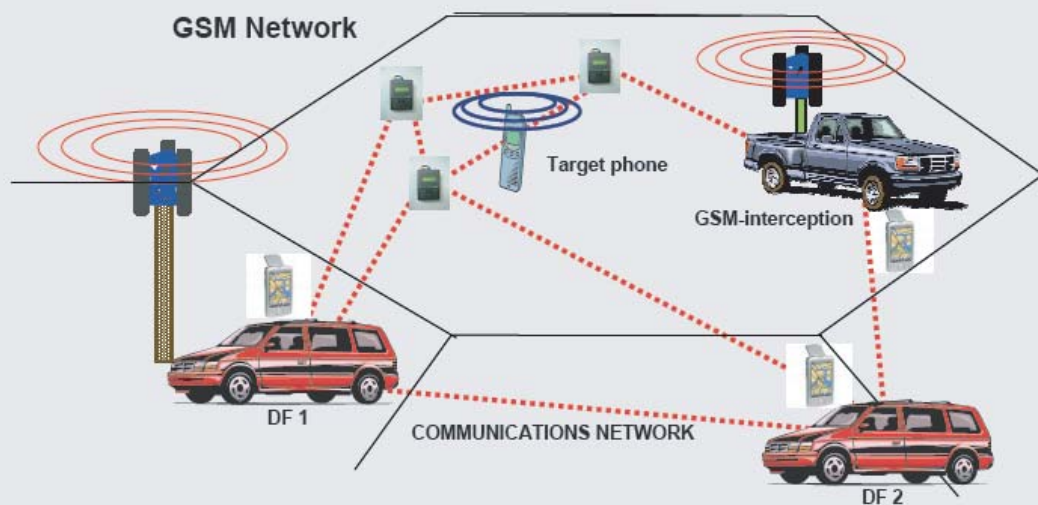


Portable Solutions,  
Remote control with PDA



- Remote control capability for the portable GSM on air monitoring system
- Wireless link enables highly covert operation

## Integrated solution

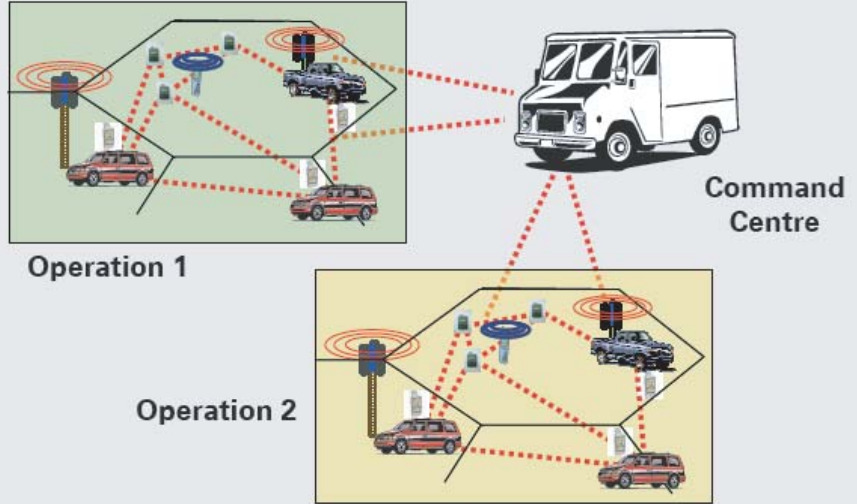


- Communications network via middleware
- GSM interception team now communicates with vehicle DF + handheld DF teams
- Aim again is to find target mobile
  - now geography requires foot mobile DF teams – perhaps target is in a building !

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### Active GSM Monitoring "on air"

#### Scaled strategic Solution



- Multiple systems , vehicle DF + handheld DF teams
- Controlled from a command centre (either static or mobile)
- Large area coverage
- Fully integrated solution for simultaneously locating multiple targets

#### Aviation Installation



## Active GSM Monitoring "on air"

### Conclusion

#### Advantages

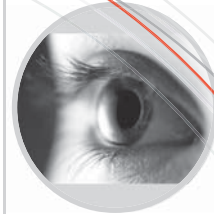
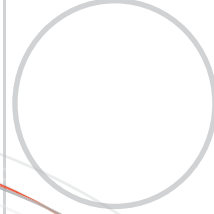
- Useful add on system to a central Monitoring Center for
  - getting information out of the GSM network (IMEI, IMSI, etc.)
  - exact location of targets in combination with a MC-GIS
  - MC provides information to the mobile on air GSM monitoring system for outside operations
- Blocking of subscribers
- Exact location of subscribers by using DF or homing
- Silent call. Faked calls and SMS
- Portable use e.g. in hotels/airports/etc., camouflaged operation
- Reasonable investment
- Operation independent and without involvement of the GSM operators

### Conclusion

#### Disadvantages

- Limited functionality of call monitoring, only outgoing calls can be monitored
- System operation must be very carefully in order that the target and the operator will not recognize the observation
- Operation must be close to the target and depends heavily on the environmental conditions (strength of GSM network, buildings, etc.)
- Operational personal must have good knowledge in GSM technology and frequency theory
- Only GSM Monitoring possible (no CDMA, UMTS)

# Product Information



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# Passive GSM "on air"

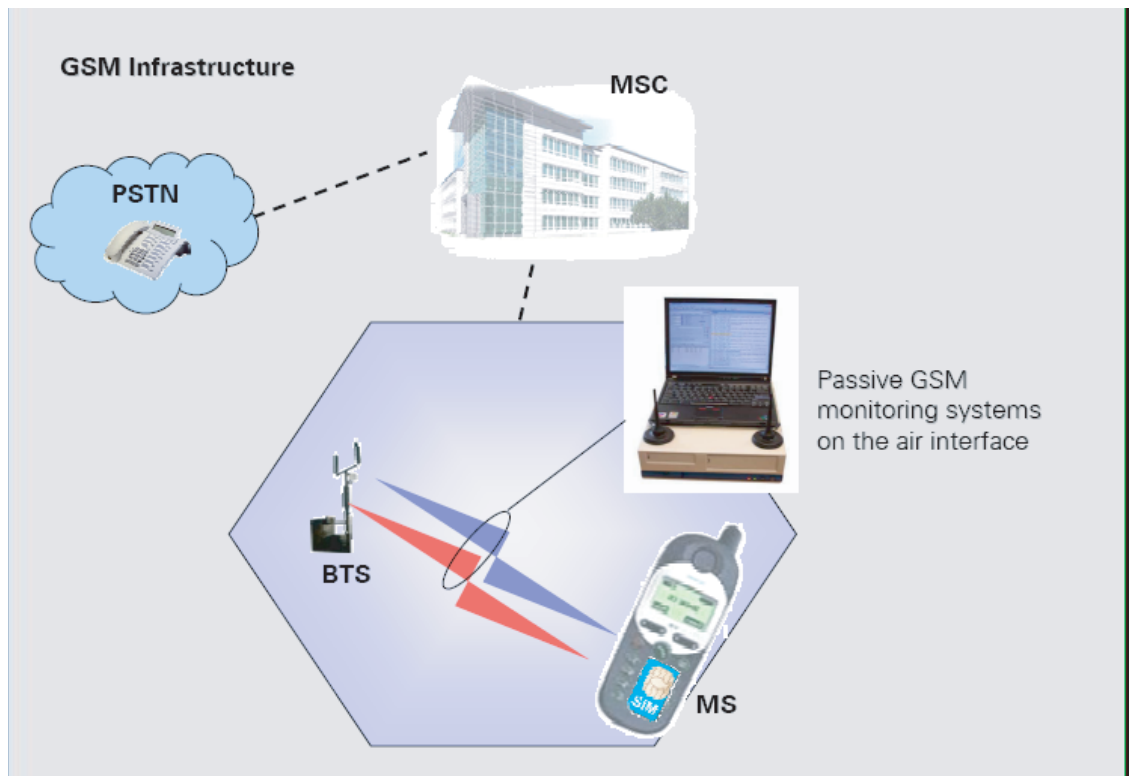
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## Passive GSM Monitoring "on air"



### Situation at the Radio Link

- Telephone number is never transmitted
- IMSI and IMEI only available during log on
- Mostly Temporary IMSI (TIMSI) on the airinterface
- Tel. No., IMSI and IMEI only when switching on the handset
- No access to network providers internal databases
- Ciphering (5.0, 5.1 or 5.2, 5.3 under development)
- Frequency hopping



**All this will have an impact of the interception results in case of passive monitoring of the air interface!!!**



## Passive GSM Monitoring "on air"

### Pro's Passive GSM air interface monitoring systems

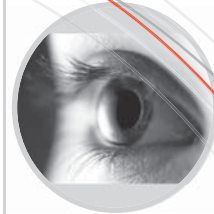
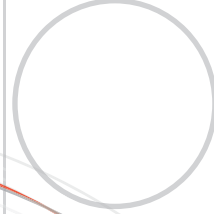
- Monitoring of incoming and outgoing calls
- Detection of phone calls based on TIMSI, decoding and recording
- Display and recording of protocols, network data of the radio cell and SMS
- Mobile operation, remote control of the system possible
- System is built up modular, basic system can monitor up to 8 channels (= 4 conversations)
- Hi distance range when using directional antennas ( several Kms)

### Disadvantages Passive GSM air interface monitoring systems

- Only in case of 5.0. or 5.2 encryption is used on the air interface, monitoring of calls is possible
- No control of the target subscriber is possible, e.g. blocking of phones
- Operation is difficult as only TIMSI is seen of many phones



# Product Information



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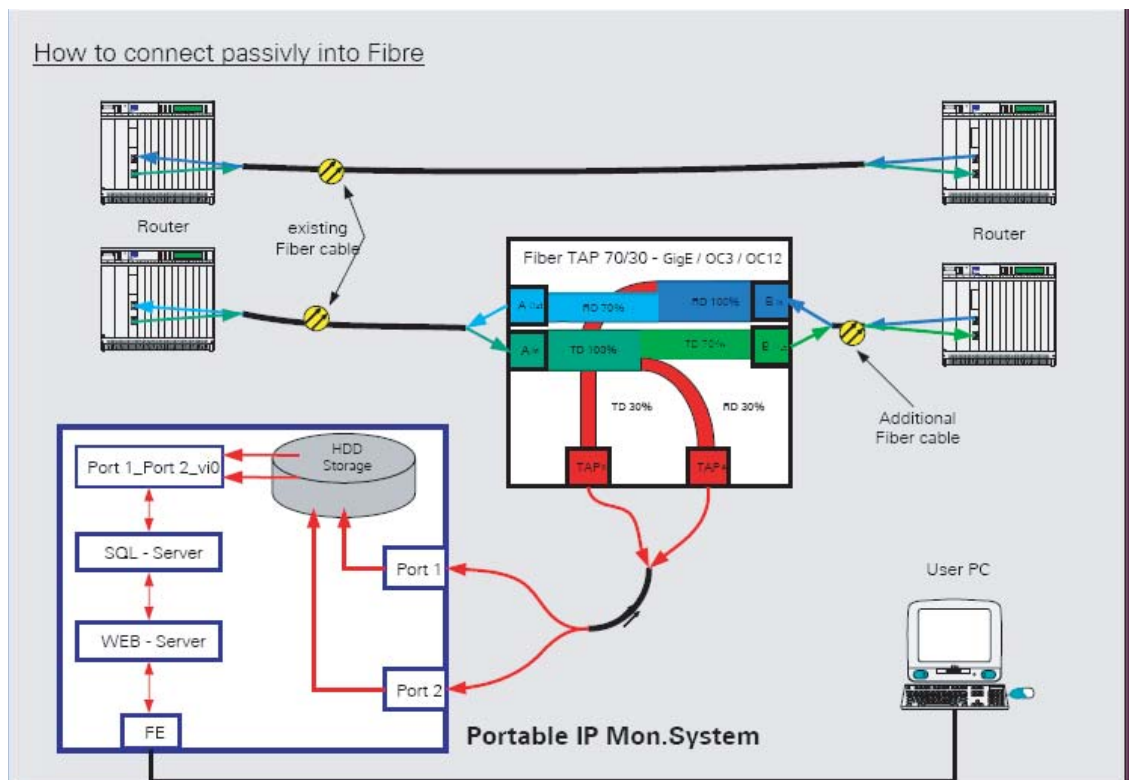
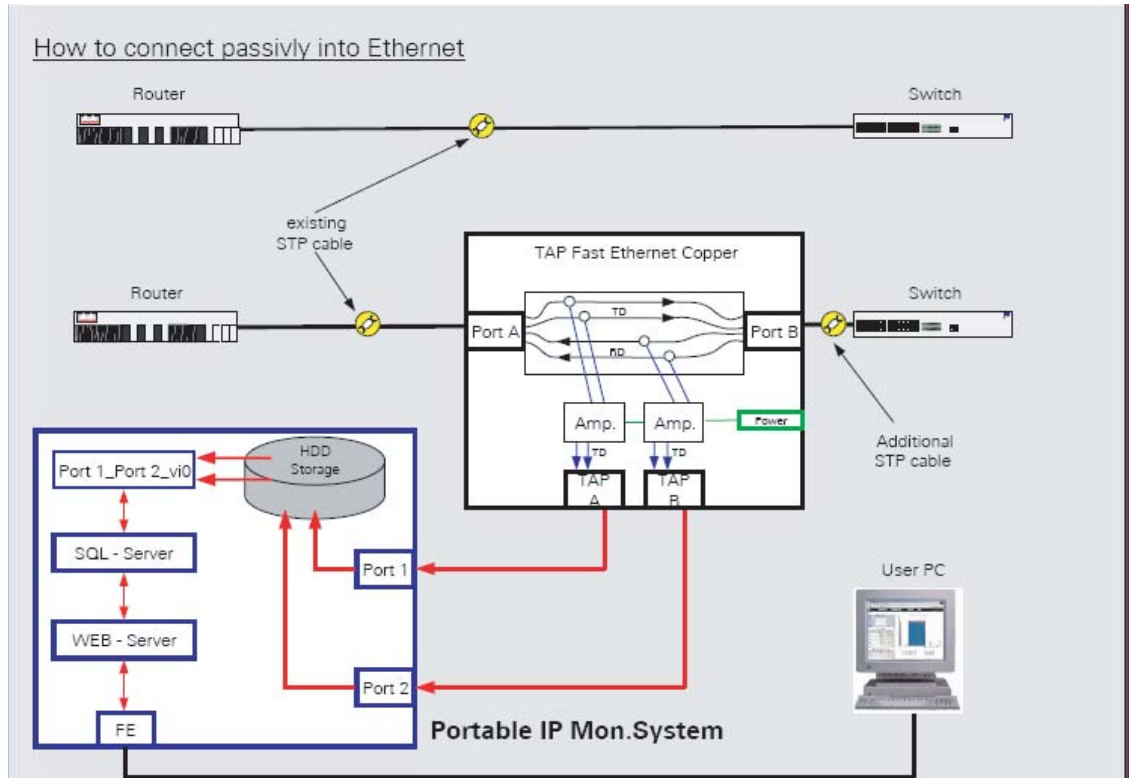
# Portable IP Monitoring Systems

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## Portable IP Monitoring Systems



## Portable IP Monitoring Systems

### Interfaces and functions

Description	2U Chassis
Max storage Capacity	900 GB
RAID-Controller	yes
Fast Ethernet monitoring	yes
Gigabit Ethernet monitoring	yes
T1/E1 monitoring	yes
T3/E3 monitoring	yes
V.35/X.21 monitoring	yes
FDDI/HSSI monitoring	yes
OC-3 monitoring (Optical Carrier 155 Mbit/s, ATM or POS networks)	yes
OC-12 monitoring (Optical Carrier 622 Mbit/s, ATM or POS networks)	yes
Multi-Interface monitoring	yes
VoIP monitoring	yes

### Reconstruction Of IP Data

➤ Complete Analysis on all protocol layers

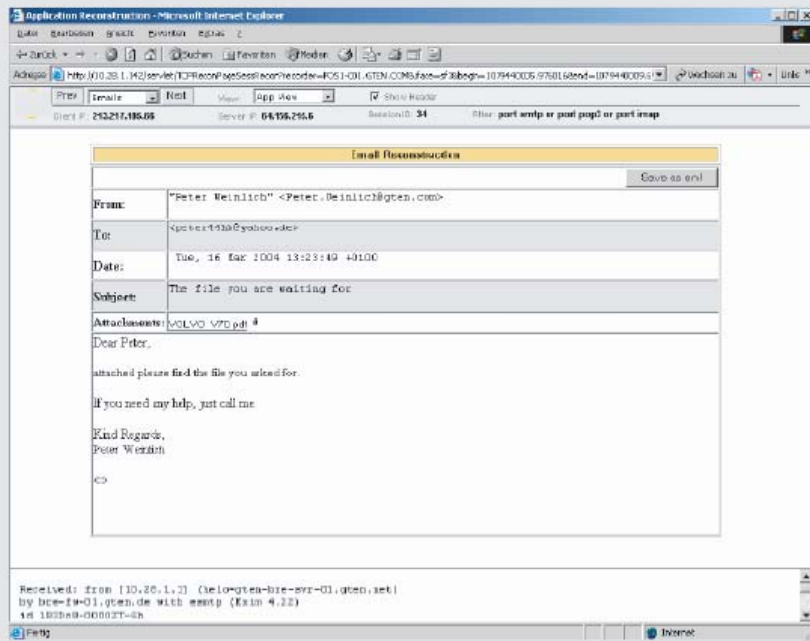
- PPP
- IP
  - UDP
  - ICMP
  - TCP
    - FTP
    - SMTP
    - POP3
    - TELNET
    - Chat
    - VoIP
    - http

➤ E-Mail reconstruction incl. all attachments

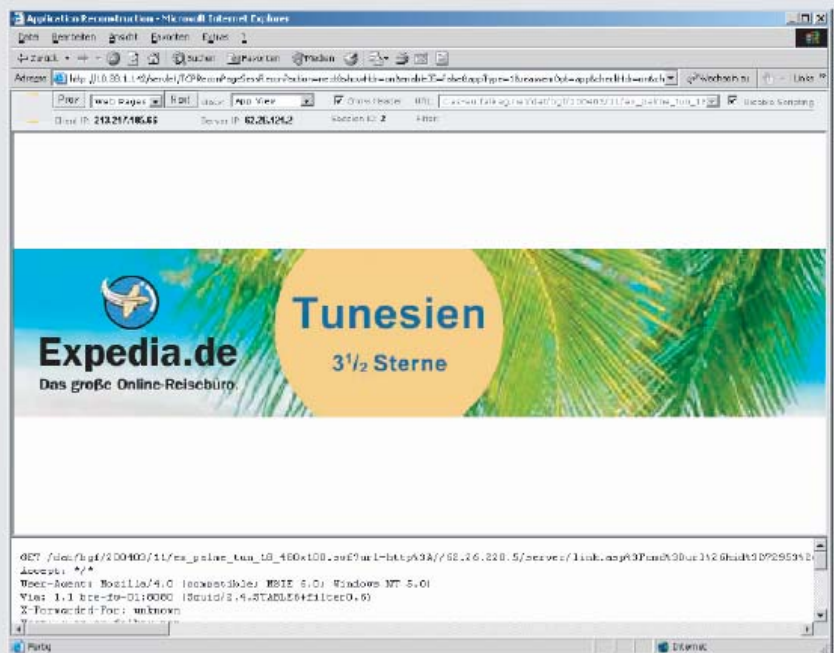
➤ VoIP reconstruction

## Portable IP Monitoring Systems

### Reconstruction of E-Mail



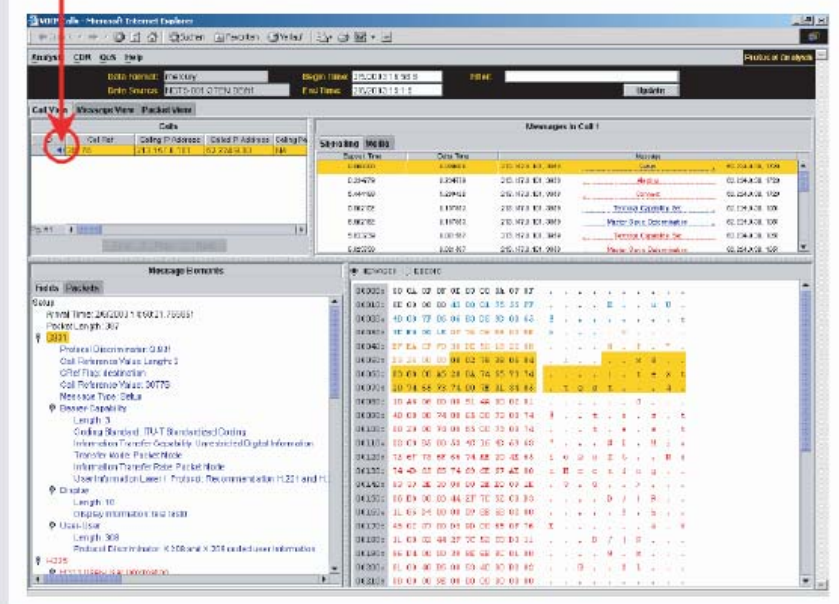
### Reconstruction of HTTP



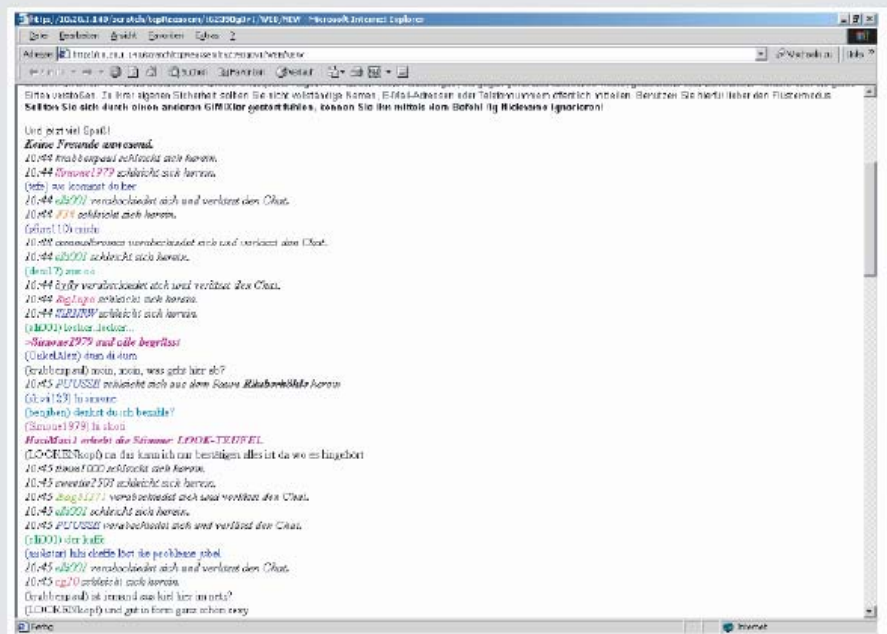
## Portable IP Monitoring Systems

### Reconstruction of VoIP

Button for replaying the VoIP call contents



### Reconstruction of CAHT sessions as HTML format



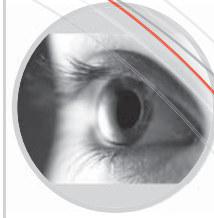
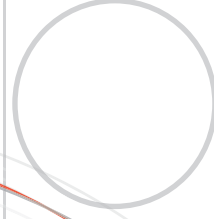
## Portable IP Monitoring Systems

### Pro's portable IP monitoring systems

- Quick deployment possible in case of urgent operation is required
- Monitoring of IP within private IP networks (e.g. big companies, hotels, university)
- Reasonable investment for e.g. monitoring of small ISPs
- Mobile use of the system outside the country
- Modular system



# Product Information



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# Satellite Monitoring Systems

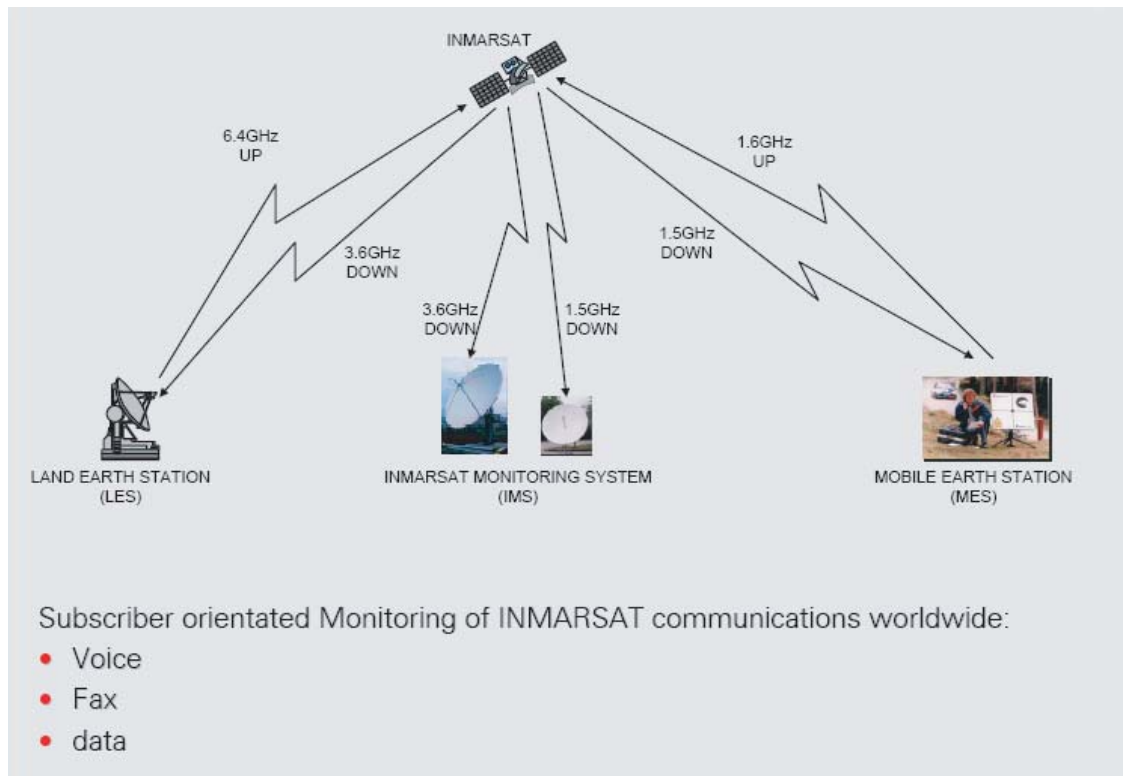
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## INMARSAT Satellite Monitoring Systems



- Monitoring of all communications links of one satellite
- Call Monitoring of specific targets
- Detection of targets within a certain area

## THURAYA Satellite Monitoring Systems



Coverage



Spot Beam configuration

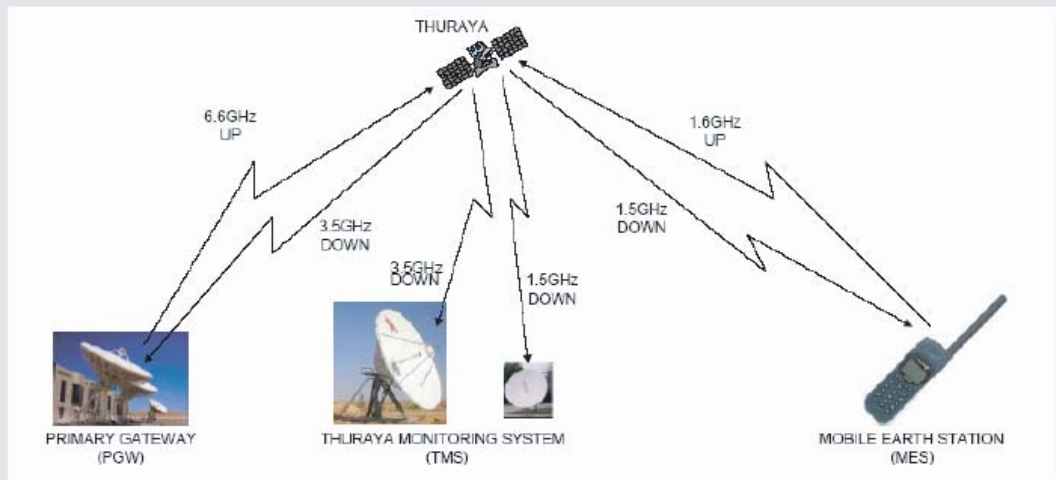


Earth Station in Sharjah / UAE



Handheld, Dual band  
GSM and Thuraya

### Principles of strategic Thuraya Monitoring



## THURAYA Satellite Monitoring Systems

### Monitoring of:

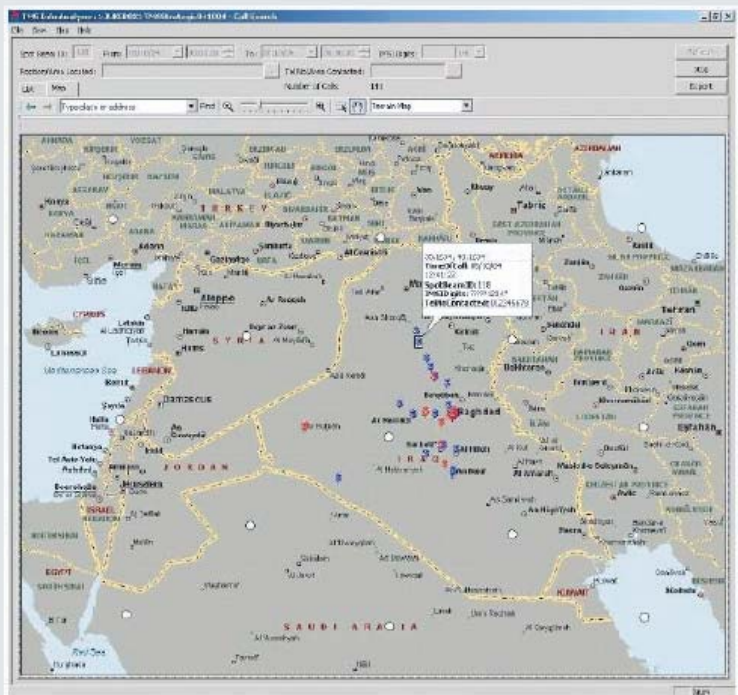
- Location of the Mobile
- Time of activity
- Type of activity (call, answer to a call, location update)
- Service provider of the mobile
- Called Number in case of mobile originated call

➔ Monitoring of call content not possible due to encryption which is used between handheld and Satellite



Example for SAT-dish for monitoring the up and down link between Satellite and gateway (approx. 10mtr)

Display of the location of the subscriber



**Mobile and portable Monitoring Systems for:**

- GSM active on air monitoring
- GSM passive on air monitoring
- GSM locating systems
- IP Monitoring
- Satellite interception for INMARSAT & Thuraya



**Valuable & powerful add on application to a central Monitoring Center (e.g. Siemens, Atis, etc.)**

**THANK YOU!**